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SWEET'S CATALOG FILE

A File of Manufacturers' Catalogs designed for the use of Architects, Engineers, Contractors and others whose practice it is to select, specify or purchase building materials, equipment and allied services.

SWEET'S CATALOG SERVICE

DIVISION OF F. W. DODGE CORPORATION

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SEE SECTION 1

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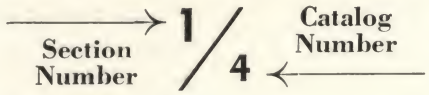

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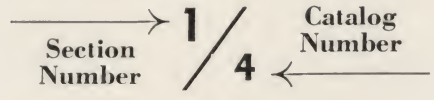

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(*See also Heaters—Water—Gas Fired—Combination Boiler and Burner*)

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Kellogg, M. W., Co. 26/100

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Kellogg, M. W., Co. 26/100

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American Chimney Corp. 26/98
Custodis, Alphons, Chimney Construction Co. 26/99
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Ceco 3/69
Concrete Engineering Co., Inc. 3/69
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Standard Electric Time Co. 29/9
Telechron 29/11
Warren Telechron Co. 29/11

Watchman's
ADT 29/1
American Automatic Electric Sales Co. 29/12
American District Telegraph Co. 29/1
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Richmond Fireproof Door Co. 10/16
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K-Veniences 18/41

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Church, C. F., Mfg. Co., Div. of American Radiator & Standard Sanitary Corp. 25/11
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Never-Split 25/12
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DeLuxe Water Saver 25/8
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Case, W. A., & Son Mfg. Co. 25/8
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Water—Low-down Tank
Case, W. A., & Son Mfg. Co. 25/8
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Overhead Door Corp. 18/20
Par-Brook Mfg. Co. 21/4
Truscon Steel Co. 11/12
Trussbilt, Inc. 10/12
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Horizontal Sliding or Trolley

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Rowe Mfg. Co. 18/23

Industrial

See Specific Kind of Door

Industrial Oven

Kinnear Mfg. Co. 10/22

Jail

See Jail—Construction and Equipment

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See Doors—Metal Covered

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See Doors—Rolling—Steel

Marine

See Specific Type of Door

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Mausoleum
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Akbar 10/22
Babcock-Davis Corp. 10/13
Barber-Colman Co. 18/15
Better Bilt Door Div. of Frederick Kaiser Products, Inc. 18/16
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Cornell Iron Works, Inc. 10/20
DeLuxe 20/21
Detroit Steel Products Co. 11/5
Durabilt Steel Locker Co. 18/18
Fenestra-Byrne 11/5
Fyrgard 10/16
Horn Folding Partition Co. 20/21
Johnson, Geo. W., Mfg. Co. 10/21
Kinnear Mfg. Co. 10/22
Llenroc 10/20
Mahon, R. C., Co. 10/24
McKee Door Co. 18/21
Newcastle Products, Inc. 20/22
Overhead Door Corp. 18/20
Peelle Co. 10/15
R-W 18/22
Richards-Wilcox Mfg. Co., Inc. 18/22
Richmond Fireproof Door Co. 10/16
Rol-Top 10/22
St. Louis Fire Door Co. 10/18
Security Fire Door Co. 10/17
Selfold 20/21
Superior 10/22
Telco 10/15
Ti-Co-Dors 10/18
Truscon Steel Co. 11/12
Uni-Motor 10/17
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Air-Kore 10/23
Alsteel-Dors 10/18
Barber-Colman Co. 18/15
Barcol OVERdoor 18/15
Better Bilt Door Div. of Frederick Kaiser Products, Inc. 18/16
Co-Bal-Dors 10/18
Coburn Trolley Track Co. 18/14
Duragard 10/16
Fold-Up-Dors 10/18
Friedrich, E. H., Co. 10/6
Fyrgard 10/16
Hamlin, Irving 13/34
Mahon, R. C., Co. 10/9
Mecco 10/10
Moeschl-Edwards Corrugating Co., Inc. 10/10
Overhead Door Corp. 18/20
Overly Mfg. Co. 10/11
Peelle Co. 10/15
R-W 18/22
Richards-Wilcox Mfg. Co., Inc. 18/22
Richmond Fireproof Door Co. 10/16
St. Louis Fire Door Co. 10/18
Seco 10/17
Sec-Tel 10/17
Security Fire Door Co. 10/17
Ti-Co-Dors 10/18
Wal-El-Dors 10/18
Wilson, J. G., Corp. 10/23
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Overhead—Hardware for
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Barcol OVERdoor 18/15
Bayley, William, Co. 11/2
Better Bilt Door Div. of Frederick Kaiser Products, Inc. 18/16
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Overhead Type—Cont.
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Cornell Iron Works, Inc. 10/20; 18/17
Durabilt Steel Locker Co. 18/18
Easy Lift 18/14
Float-Over 10/20; 18/17
Kinnear Mfg. Co. 10/22
M & M 11/11
McKee Door Co. 18/21
Mesker Bros. Iron Co. 11/11
Overdoors 11/12
Overhead Door Corp. 18/20
OveR-Way 18/22
R-W 18/22
Richards-Wilcox Mfg. Co., Inc. 18/22
Rol-Top 10/22
Roll-up 18/24
Ro-Way 18/23
Rowe Mfg. Co. 18/23
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Stanley Works 18/24
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Plywood Panels for
See Plywood

Power
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See Doors—Cold Storage or Refrigerator

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Atchison Revolving Door Co. 10/26
G.B.C. 10/27
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Alsteel-Dors 10/18
Alstele 10/5
Co-Bal-Dors 10/18
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Johnson, Geo. W., Mfg. Co. 10/21
Kinnear Mfg. Co. 10/22
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Mahon, R. C., Co. 10/24
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Richards-Wilcox Mfg. Co., Inc. 18/22
Richmond Fireproof Door Co. 10/16
Roanoke Iron & Bridge Works, Inc. 23/13
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Screen
See Screens—Insect

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Alstele 10/5
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Ceco 3/69
Concrete Engineering Co., Inc. 3/69
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Durabilt Steel Locker Co. 18/18
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Firecraft Door Co. 10/5
Float-Over. 18/17
FyeR-Ward 18/22
Kinnear Mfg. Co. 10/22
Mesker Bros. Iron Co. 11/11
Miami Cabinet Div., Philip Carey Co. 25/37
Morgan 11/12
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Richards-Wilcox Mfg. Co., Inc. 18/22
Richmond Fireproof Door Co. 10/16
Roanoke Iron & Bridge Works, Inc. 23/13
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St. Louis Fire Door Co. 10/18
Security Fire Door Co. 10/17
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Truscon Steel Co. 11/12
Vulcan Rail & Construction Co. 6/23
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Himco 17/17
Himmel Brothers Co. 17/17
Kawneer Co. 17/18
Pittsburgh Plate Glass Co. 17/1
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Gem 25/16
Ketcham, G. M., Mfg. Corp. 25/15
Lehman Sprayshield Co. 25/16
Mermaid 25/16
Pittsburgh Plate Glass Co. 17/1
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Shower Stall—Metal

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Dean 22/46
Elian, Frank, & Co. 26/111
G&G Hoist Corp. 26/112
Kiesling, John W., & Son, Inc. 30/6
Potts Ash Hoist Corp. 26/113
Richards & Kelly Mfg. Co. 9/25
Washburn & Granger, Inc. 22/46
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Sidewalk—Opening and Closing Devices for

Dean 22/46
G&G Hoist Corp. 26/112
Potts Ash Hoist Corp. 26/113
Washburn & Granger, Inc. 22/46

Sidewalk—Vault Light

American 3 Way-Luxfer Prism Co. 9/23
Richards & Kelly Mfg. Co. 9/25
3 Way 9/23
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Sliding, Folding, etc.—Wood or Metal

Art Metal Construction Co. 10/2
Barber-Colman Co. 18/15
Barcol OVERdoor 18/15
Bayley, William, Co. 11/2
Better Bilt Door Div. of Frederick Kaiser Products, Inc. 18/16
Crooks, W. D., & Sons 10/31
Detroit Steel Products Co. 11/5
Fenestra 11/5
Hamlin, Irving 13/34

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Sliding, Folding, etc.—Wood or Metal—Cont.

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McKee Door Co. 18/21
Mesker Bros. Iron Co. 11/11
Overhead Door Corp. 18/20
Peelle Co. 10/15
R-W 18/22
Richards-Wilcox Mfg. Co., Inc. 18/22
Richmond Fireproof Door Co. 10/16
Rol-Top 10/22
St. Louis Fire Door Co. 10/18
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Truscon Steel Co. 11/12
Wilson, J. G., Corp. 10/23
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Evanston 13/34
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Hauserman, E. F., Co. 20/4
Horn Folding Partition Co. 13/35; 20/21
Mitchell, Robert, Mfg. Co. 13/36
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Peelle Co. 10/15
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Riverbank Insulating Door Co. 13/37
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See Doors—Vertical Sliding or Telescoping

Tin Clad

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Ebco Mfg. Co. 20/13
Ferrometal 20/16
Fiat Metal Mfg. Co. 20/15
Flushmetal 20/14
Flush-Metal Partition Corp. 20/14
Krinlac 20/13
Lawson Milwaukee 20/16
Metal-flush 20/7
Metalunit 20/18
Mills Co. 20/7
Milwaukee Stamping Co. 20/16
Panelmetal 20/14
Parcolite 20/13
Sanymetal Products Co., Inc. 20/17
Silentsteel 20/13
Sturdibilt 20/13
Weis, Henry, Mfg. Co., Inc. 20/18
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Tubular Steel

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Diebold Safe & Lock Co. 23/6
Herring-Hall-Marvin Safe Co. 23/7
Mosler Safe Co. 23/9
Triumph 23/6
York Safe and Lock Co. 23/8

Veneered—Fire Resisting Asbestos and/or Wood

Hardwood Products Corp. 10/32
Mitchell, Robert, Mfg. Co. 10/34
Pyrono 10/34
Riverbank 10/32
Specifications 10/32; 10/34

Veneered—Phenolic Fiber

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Hardwood Products Corp....10/32
Huttig Mfg. Co....11/17
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Mitchell, Robert, Mfg. Co....10/34
Pyrono 10/34
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Cornell Iron Works, Inc....10/20
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Truscon Steel Co....11/12
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Detroit Steel Products Co.... 11/5
Fenestra 11/5
Fyrgard 10/16
Kiesling, John, W., & Son, Inc.... 30/6
Kinnear Mfg. Co....10/22
McKee Door Co....18/21
Peelle Co. 10/15
Richmond Fireproof Door Co....10/16
St. Louis Fire Door Co....10/18
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Wood—Sliding, Folding, etc.
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Wood—Solid
Curtis Companies Service Bureau....10/30
Durabilt Steel Locker Co....18/18
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Huttig Mfg. Co....11/17
Roddis Lumber and Veneer Co....10/35
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Crooks, W. D., & Sons....10/31
Hamlin, Irving 13/34
Kinnear Mfg. Co....10/22
Mitchell, Robert, Mfg. Co....10/34; 13/36
Ray Proof Corp. 13/47
Roddis Lumber and Veneer Co....10/35
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Armstrong Cork Products Co....15/44
DeLuxe 22/17
Imperial 22/17
Perma Sheen....22/17
Tracy Mfg. Co....22/17

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Elkay Mfg. Co....25/13
Inco 22/16
International Nickel Co., Inc....22/16; 25/24
Monel Metal....22/16; 25/24
Silvi Sheen....22/17
Straitline 22/16
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Micarta 12/19; 15/21
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United States Plywood Co., Inc....12/19
Westinghouse Electric & Mfg. Co....15/21

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Boards—Stainless Steel
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Drainers

Cellar
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Areaway
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Compound Injector & Specialty Co....24/23
Crampton-Farley Brass Co....24/24
Dehn's 24/23
Josam Mfg. Co....24/27
PeerlesS 24/23
Re-Tar-Do 24/23
San-Seal-O 24/24
Signet 24/24
Wade Mfg. Co....24/28
Zurn, J. A., Mfg. Co....24/29

Double Drainage
Josam Mfg. Co. 24/27

Floor, Yard, etc.
Anti-Clog 24/22
Compound Injector & Specialty Co....24/23
Covert, H. W., Co....24/22
Crampton-Farley Brass Co....24/24
Dehn's 24/23
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Duriron Co., Inc....24/14
Fiat Metal Mfg. Co....25/14
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Josam Mfg. Co....24/27
PeerlesS 24/23
Re-Tar-Do 24/23
San-Seal-O 24/24
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Wade Mfg. Co....24/28
Yeomans Brothers Co....24/35
Zurn, J. A., Mfg. Co....24/29
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Wade Mfg. Co....24/28

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Josam Mfg. Co. 24/27
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Josam Mfg. Co. 24/27

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Air-Way 24/21
Boosey, Norman, Mfg. Co. 24/21
Compound Injector & Specialty Co. 24/23
Dehn's 24/23
GeM 24/23
Greaseptor 24/29
Josam Mfg. Co. 24/27
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Wade Mfg. Co. 24/28
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Josam Mfg. Co. 24/27

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Æolus Dickinson Industrial Div. Paul Dickinson, Inc. 9/9
Barrett Co. 8/3
Dickinson 9/9
Harrington, L. W. 24/25
Holt 8/3
Josam Mfg. Co. 24/27
Louden Machinery Co. 23/39
Mahon, R. C., Co. 24/26
Wade Mfg. Co. 24/28
Zurn, J. A., Mfg. Co. 24/29
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Scupper
Æolus Dickinson Industrial Div. Paul Dickinson, Inc. 9/9
Air-Gate 9/9
Covert, H. W., Co. 24/22
Dickinson 9/9
Josam Mfg. Co. 24/27
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Everson Filter Co. 23/30
Josam Mfg. Co. 24/27
Roberts Filter Mfg. Co. 23/32
Zurn, J. A., Mfg. Co. 24/29

Trap
Compound Injector & Specialty Co. 24/23
Crampton-Farley Brass Co. 24/24
Dehn's 24/23
Josam Mfg. Co. 24/27
PeerlesS 24/23
Re-Tar-Do 24/23
San-Seal-O 24/24
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Wade Mfg. Co. 24/28
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Garcy 7/15
K-Veniences 18/41
Knape & Vogt Mfg. Co. 18/41
Maforco 22/23
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Steel Shelving
See Shelving—Steel

Drawn

Metal Shapes
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Dressers

Kitchen
See Cabinets—Kitchen

Dressing

Cabinets
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Dressings

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Ryerson, Joseph T., & Son, Inc. 3/51

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Fountains
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Babcock-Davis Corp. 10/13
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Janes & Kirtland, Inc. 22/9
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Kiesling, John W., & Son, Inc. 30/6
Peelle Co. 10/15
Richmond Fireproof Door Co. 10/16
St. Louis Fire Door Co. 10/18
Seco 10/17
Security Fire Door Co. 10/17
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Art Metal Construction Co. 10/2
Richmond Fireproof Door Co. 10/16
St. Louis Fire Door Co. 10/18
Seco 10/17
Security Fire Door Co. 10/17
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Kiesling, John W., & Son, Inc. 30/6
Richmond Fireproof Door Co. 10/16
St. Louis Fire Door Co. 10/18
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Richmond Fireproof Door Co. 10/16
St. Louis Fire Door Co. 10/18
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Beckwith Elevator Co., Inc. 30/1
Capital Lift & Mfg. Co. 30/3
Chelsea Elevator Co. 30/2
Economy 30/3
Energy Elevator Co. 30/4
Elevator Supplies Co., Inc. 30/13
Kiesling, John W., & Son, Inc. 30/6
Otis Elevator Co. 30/8
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Sedgwick Machine Works 30/10
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Beckwith Elevator Co., Inc. 30/1
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Chelnogear 30/2
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Beckwith Elevator Co., Inc. 30/1
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Ash—Fireplace
Covert, H. W., Co. 26/102
Donley Brothers Co. 26/104
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Equal-Aire Incinerator Div. of Sargent Building Specialties Co. 22/39
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Kernerator 22/41
Milcor Steel Co. 25/27
Peerless Mfg. Corp., Inc. 26/106
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Cement and Concrete
Adaflint 4/1
Adensite Co., Inc. 4/1
Agatex 4/21
American Crayon Co. 16/1
Anti-Hydro Waterproofing Co. 4/2
Aquabar Waterproofing Products, Inc. 4/3
Aquatite 4/3
Armortop 4/2
Art-Roc 4/21
B.C.C. 4/6
Building Chemicals Corp. 4/6
Certain-teed Products Corp. 16/10
Colored Master Mix 4/13
Colored Metalicron 4/13
Colormix 4/13
Colorundum 4/9
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Ferricon 4/21
Ferro-Fax 4/9
Filtite 16/1
Flintox 4/20
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Birch
See Flooring—Wood—Maple, Beech or Birch

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Bar—Concrete Reinforcement

Bar-Tys 3/47
Bethlehem 3/50
Ceco 3/69
Concrete Engineering Co., Inc. 3/69
Concrete Steel Co. 3/47
Donley Brothers Co. 26/104
Hy-Chairs 3/47
J & L 5/6
Jones & Laughlin Steel Corp. 5/6
Kalman Steel Corp. 3/50
Ryerson, Joseph T., & Son, Inc. 3/51
Securo 3/47
Ty-Chairs 3/47

Beam, Joist, Wall, etc.

Duplex Hanger Co. 6/24
Ideal Hanger Co. 6/25
Jones & Laughlin Steel Corp. 5/6
R & L 6/24

Door

(*See also Hardware*)
Atlas 30/16
Coburn Trolley Track Co. 18/14
ES 30/13
Elevator Supplies Co., Inc. 30/13
Garcy 7/15
Gem 30/14
Grant Elevator Equipment Corp. 30/14
Louden Machinery Co. 23/39
Otis Elevator Co. 30/8
R-W 18/22
Richards-Wilcox Mfg. Co., Inc. 18/22; 30/15
Rich-Wil 30/15
Wagner Mfg. Co. 30/16
See also 7/15; 23/39; 24/32

Furring—Suspended Ceiling

See Clips—Metal Lath—Ceiling, Stucco Reinforcement

Garment

(*See also Garment—Carrier Equipment; Closet—Racks and Equipment*)
Knape & Vogt Mfg. Co. 18/41
K-Veniences 18/41
Peterson 23/53
Vogel Peterson Co., Inc. 23/53

Gutter

B.B. 8/43
Berger Brothers Co. 8/43
Gem 8/43
Penn 8/43
Rival 8/43
See also 8/45

Luminaire

Lunaire 28/9
Lunalux 28/9
Lunalux, Jr. 28/9
Magnalux 28/9
Magnalaire 28/9
Magnalite 28/9
Silvurn 28/9
Sollaire 28/9
Sollux 28/9
Sollite 28/9
Westinghouse Electric & Mfg. Co. 28/9

Pipe

Grinnell Co., Inc. 26/93
Porter, H. W., & Co., Inc. 26/96
Ric-wiL Co. 26/97
U.F.S. 26/93
See also 26/74

Hangers—Cont.

Pipe Coil

Maforco 22/23
Market Forge Co. 22/23

Radiator

E-Z 26/75
Healy-Ruff Co. 26/75
See also 26/72
Specifications 26/75

Hardboard

Fiber

See Wall—Board—Fiber

Hardeners and Densifiers

Cement and Concrete

Adaflint 4/1
Adensite Co., Inc. 4/1
Agatex 4/21
American Crayon Co. 16/1
Anti-Hydro Waterproofing Co. 4/2
Aquabar Waterproofing Products, Inc. 4/3
Aquatite 4/3
Armortop 4/2
Art-Roc 4/21
B.C.C. 4/6
Building Chemicals Corp. 4/6
Certain-teed Products Corp. 16/10
Colored Master Mix 4/13
Colored Metalicron 4/13
Colormix 4/13
Colorundum 4/9
Cretemix "A" 4/22
Dehydratine No. 80 ..... 4/9
Durocon 4/3
Duro-Mix 4/3
Dust-X 14/20
Dycrome 4/13
Ferricon 4/21
Ferro-Fax 4/9
Filtite 16/1
Flintox 4/20
Floortex 4/3
Glazecoat 4/13
Hard-n-tyte 4/6
Hillyard Chemical Co. 16/2
Horn, A. C., Co. 4/9
Hornstone Crystals 4/9
Hurundum 4/21
Iron Clad Crystals No. 7B 4/3
Ironco 4/3
Kemi-Kote 4/22
Lapidolith 16/4
Lithocrome 9/23
Loomis, W. H., Talc Corp. 4/11
Loomite 4/11
Master Builders Co. 4/13
Master Mix 4/13
Maximent Co. 15/9
Merco 16/21
Metalicron 4/13
Nevins, Oscar W., Co., Inc. 4/14
Old Faithful 16/1
Omicron 4/13
Penetrem 4/22
Pozzolith 4/13
R.I.W. 4/20
Reardon Co. 16/28a
Saniseal 4/13
Sherwin-Williams Co. 16/29
Solvay Sales Corp. 4/17
Sonneborn, L., Sons, Inc. 16/4
Standard Waterproofing Corp. 4/19
Stanwaco 4/19
Super-Colorseal 4/13
Sureseal 4/14
Toch Brothers Inc. 4/20
Tox-Mix 4/20
Tremco Mfg. Co. 4/22
Trimix 16/4
Truscon Laboratories 4/21
Venostone 16/28a
See also 8/2
Specifications 4/1; 4/2; 4/3; 4/13; 4/21; 16/4; 16/28a; 16/29

Hardware

(See also Specific Product)

Adjusters—Screen and Storm Sash

Casement Hardware Co. 18/33
Getty, H. S., & Co., Inc. 18/35
Mesker Bros. Iron Co. 11/11
Normandy 11/19
White Pine Sash Co. 11/19
Win-Dor 18/33

Airplane and Dirigle Hangar Door

(See also Doors—Airplane Hangar)
R-W 18/22
Richards-Wilcox Mfg. Co., Inc. 18/22

Astragal

Von Duprin 18/42
Vonnegut Hardware Co. 18/42

Awning

Astrup Co. 19/42

Baffle Gate

Bright, H. V., Turn Stile Co. 23/23

Bar

Garcy 7/15

Bolts—Cremone

Getty, H. S., & Co., Inc. 18/35
See also 18/25

Builders

See Hardware—Finish—Door; also Specific Item

Butts

See Hinges

Canopy

Astrup Co. 19/42

Casement Window—Adjusters

Artex 11/12
Auto-Lock 11/12
Casement Hardware Co. 18/33
Ceco 3/69
Getty, H. S., & Co., Inc. 18/35
Grant Pulley and Hardware Co. 18/34
Hope's Windows Inc. 11/9
Kawneer Co. 11/10
Mesker Bros. Iron Co. 11/11
Normandy 11/19
Queen 18/34
Rixson, Oscar C., Co. 18/29
Sealair 11/10
Thru-Screen 18/33
Truscon Steel Co. 11/12
White Pine Sash Co. 11/19
Win-Dor 18/33
Windsor-Universal 11/11
Zimmerman, G. F. S., Co., Inc. 18/37
Specifications 18/33; 18/35

Casement Window—Cleaning Hinge

Casement Hardware Co. 18/33
Win-Dor 18/33

Casement Window—Fasteners and Bolts

Casement Hardware Co. 18/33
Getty, H. S., & Co., Inc. 18/35
Hope's Windows Inc. 11/9
Mesker Bros. Iron Co. 11/11
Truscon Steel Co. 11/12
Win-Dor 18/33
Zimmerman, G. F. S., Co., Inc. 18/37
See also 18/25
Specifications 18/35

Casement Window—Sash Lifting Butts

Grant Pulley and Hardware Co. 18/34
Queen 18/34

Casement Window—Sash Lifting Pivots

Grant Pulley and Hardware Co. 18/34
Queen 18/34

Casement Window—Stays

Casement Hardware Co. 18/33
Kawneer Co. 11/10
Rixson, Oscar C., Co. 18/29
Sealair 11/10
Win-Dor 18/33

Cold Storage Door

See Doors—Cold Storage or Refrigerator

Hardware—Cont.

Colored

Lockwood Hardware Mfg. Co. 18/25
Patrician 18/25

Combination—Metal and Plastic

Lockwood Hardware Mfg. Co. 18/25
Patrician 18/25

Door—Holders

Getty, H. S., & Co., Inc. 18/35
Rixson, Oscar C., Co. 18/29
Von Duprin 18/42
Vonnegut Hardware Co. 18/42
See also 10/1

Finish—Door

Bommer Spring Hinge Co. 18/26
Chicago Spring Hinge Co. 18/27
Getty, H. S., & Co., Inc. 18/35
Lawson Milwaukee 18/28; 20/16
Lockwood Hardware Mfg. Co. 18/25
Metalunit 20/18
Mills Co. 20/7
Milwaukee Stamping Co. 18/28
Nu-Jamb 18/28
Patrician 18/25
Sanymetal Products Co., Inc. 20/17
Von Duprin 18/42
Vonnegut Hardware Co. 18/42
Weis, Henry, Mfg. Co., Inc. 20/18
WeiSteel 20/18
See also 25/41
Specifications 20/18

Fire Door and Shutter

R-W 18/22
Richards-Wilcox Mfg. Co., Inc. 18/22

Folding Door or Partition

See Hangers—Door—Sliding Folding Partition

Garage Door

Barber-Colman Co. 18/15
Barcol OVERdoor 18/15
Coburn Trolley Track Co. 18/14
Kinnear Mfg. Co. 10/22
R-W 18/22
Richards-Wilcox Mfg. Co., Inc. 18/22
Slidaside 18/22
Slidetite 18/22
Stanley Works 18/24
Swing-up 18/24
Tip-Top 10/22
See also 18/16
Specifications 10/22; 18/22

Hinges

See Hinges

Lavatory and Toilet Door

American Steel Furniture Co. 20/12
Bommer Spring Hinge Co. 18/26
Chicago Spring Hinge Co. 18/27
Fiat Metal Mfg. Co. 20/15
Flush-Metal Partition Corp. 20/14
Lawson Milwaukee 20/16
Lawson Universal 18/28
Metalunit 20/18
Mills Co. 20/7
Milwaukee Stamping Co. 18/28
Sagless 18/27
Sanymetal Products Co., Inc. 20/17
Triplex 18/27
Weis, Henry, Mfg. Co., Inc. 20/18
WeiSteel 20/18
See also 23/11
Specifications 18/28; 20/15; 20/17; 20/18

Revolving Door

See Doors—Revolving

Sash Chain or Cord

See Chain—Sash; Cord—Sash

Sash Operators

See Sash—Operating Devices

Sash Pulleys

See Pulleys—Sash

Hardware—Cont.

Screen—Door and Window
(*See also Screens—Insect*)
Burrowes Corp. 19/1
Getty, H. S., & Co., Inc. 18/35
Mesker Bros. Iron Co. 11/11
Truscon Steel Co. 11/12
Watson Mfg. Co., Inc. 19/12
Windsor-Universal 11/11

Shelving—Adjustable
Garcy 7/15
Garden City Plating & Mfg. Co. 7/15
Knape & Vogt Mfg. Co. 18/41
K-Veniences 18/41
Lyon Metal Products, Inc. 21/12

Show Case or Counter
See Cases—Display; Cases—Museum or Treasure Room

Sliding Door
See Hangers—Door—Straight Sliding

Tent
Astrup Co. 19/42

Theater
Clark, Peter, Inc. 23/19

Transom
Getty, H. S., & Co., Inc. 18/35
Rixson, Oscar C., Co. 18/29
Zimmerman, G. F. S., Co., Inc. 18/37
See also 23/37

Window
Austral Sales Corp. 18/32
Bayley, William, Co. 11/2
Caldwell Mfg. Co. 18/3
Grant Pulley and Hardware Co. 18/34
Mesker Bros. Iron Co. 11/11
New York Universal Window Co., Inc. 18/31a
Normandy 11/19
Pullman Mfg. Corp. 18/4
Tabor 18/34
Truscon Steel Co. 11/12
Universal 18/31a
White Pine Sash Co. 11/19
Williams Pivot Sash Co. 18/36
See also 11/3; 18/25; 18/35; 25/41
Specifications 18/32; 18/36

Window Fixtures—Balanced
See Windows—Reversible

Window Fixtures—Reversible
See Windows—Reversible

Window—Fixtures—Sliding Casement
See Hardware—Sliding Folding—Casement Window

Hardwood

Flooring
See Flooring—Wood—Specific Type

Hat

Racks
See Racks—Hat and Coat

Hatchways

Roof Access
B-D Easy 10/13
Babcock-Davis Corp. 10/13
Specifications 10/13

Heads

Drinking Fountain
See Fountains—Drinking

Exhaust Steam
Æolus Dickinson Industrial Div. Paul Dickinson, Inc. 9/9
Dickinson 9/9

Leader—Copper
See 8/45

Leader—Lead
Hope's Windows Inc. 11/9

Pump—Deep Well
See Pumps—Deep Well—Plunger

Heads—Cont.

Shower Bath
See Baths—Shower or Needle

Sprinkler
See Sprinkler—Systems—Automatic—Fire

Heat

Exchangers, Interchangers, Economizers, etc.
(*See also Heaters—Water—Indirect*)
Young Radiator Co. 26/70
See also 22/32; 24/40; 24/41; 24/48

Generation
See Boilers; Heaters; Furnaces

Regulators
See Controllers—Temperature; Thermostats; Regulators—Damper

Heaters

(*See also Radiators—Brass or Copper; Radiators—Cabinet; Radiators—Tubular; Radiators—Concealed; Furnaces; Radiators—Electric*)

Air Conditioning
See Heaters—Unit

Air—Convector Type
See Radiators—Convector Type

Air—Electric—Auxiliary or Bathroom
Biltin 25/31
Peerless Mfg. Corp., Inc. 26/106
Solar Glow 24/47
Westinghouse Electric & Mfg. Co. 24/47

Air—Electric—Auxiliary or Bathroom—Fan Type
Thermador Electrical Mfg. Co. 26/71
See 24/45

Air—Electric—Fireplace or Mantel
Colonial Fireplace Co. 26/101
Glo-Hot 26/101
Solar Glow 24/47
Westinghouse Electric & Mfg. Co. 24/47
See also 26/106

Air—Electric—Portable—Fan Type
Thermador Electrical Mfg. Co. 26/71

Air—Electric—Thermostatically Controlled
(*See also Specific Type of Heater*)
Westinghouse Electric & Mfg. Co. 24/47

Air—Electric Thermostatically Controlled—Fan Type
Thermador Electrical Mfg. Co. 26/71
Watchman 26/71

Air—Fireplace—Units
Covert, H. W., Co. 26/102
Heatilator Co. 26/105
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Air—Warm Air Furnaces
See Furnaces—Warm Air

Convector Type
See Radiators—Convector Type

Fireplace
See Heaters—Air—Electric Fireplace

Furnace Type
See Furnaces

Garage—Electric
See Radiators—Electric; Heaters—Air—Electric

Feed Water
Whitlock Coil Pipe Co. 24/48
See also 24/40; 24/41; 26/23

Hot Water
See Heaters—Water; Boilers

Immersion Electric
Westinghouse Electric & Mfg. Co. 24/47

Indirect
See Heaters—Water—Indirect

Laundry
See Specific Type of Water Heater

Heaters—Cont.

Oil—Fuel

Anthony Company 26/22
See also 24/40; 24/41; 24/48

Submerged Water

See Heaters—Water—Indirect

Unit—Boiler only—Coal, Gas or Oil Fired

(See also Oil Burning Equipment)

Electrol Incorporated 26/5
Electrol-Kewanee 26/5
Federal 26/24
Gilbarco 26/8
Gilbert & Barker Mfg. Co. 26/8
Heat-An-Aire 26/13
May Oil Burner Corp. 26/13
Oil-O-Matic 26/36
Williams Oil-O-Matic Heating Corp. 26/36
See also 26/26; 26/78

Unit—Boiler—Coal, Gas or Oil Fired—Fan or Blower, Air Washer, Moistener and/or Filter

(See also Oil Burning Equipment; Boilers—Heating; Furnaces)

American Blower Corp., Div. of American Radiator & Standard Sanitary Corp. 26/1
Carrier Engineering Corp. 26/3
Clarage Fan Co. 26/2
Climator 26/14
Conditioner 26/4
Delco Appliance Corp. 26/4
Delco-Heat 26/4
Duotherm 26/2
Electrol-American 26/5
Electrol Incorporated 26/5
Fox Furnace Co., Div. of American Radiator & Sanitary Corp. 26/6
Frigidaire Division, General Motors Corp. 26/7
G-E 26/9
General Electric Co. 26/9
Gilbarco 26/8
Gilbert & Barker Mfg. Co. 26/8
Heat-An-Aire 26/13
Holland Furnace Co. 26/10
May Oil Burner Corp. 26/13
Modernaire 26/14
Moditherm 26/2
Mueller, L. J., Furnace Co. 26/14
Oil-O-Matic 26/19
Perfection Stove Co., Inc. 26/17
Sunbeam 26/6
Superfex 26/17
Tempered-Aire 26/20
Weathermaker 26/3
Williams Oil-O-Matic Heating Corp. 26/19
Wood, Gar, Industries, Inc. 26/20
York Ice Machinery Corp. 22/32
See also 26/78

Unit—Indirect Heat with Blower or Fan

Carrier Engineering Corp. 26/3
Delco Appliance Corp. 26/4
Delco-Heat 26/4
De Luxe 26/16
Dunham, C. A., Co. 26/78
Featherfin 26/67
Featherweight 26/67
Grinnell Co., Inc. 26/69
Hold-Heet 26/15
Kroy 26/3
Mueller, L. J., Furnace Co. 26/14
Rexvane 26/65
Russell Electric Co. 26/15
Sturtevant, B. F., Co. 26/16; 26/65
Thermolier 26/69
Utility 26/67
Weathermaker 26/3
Wing, L. J., Mfg. Co. 26/67
Young Radiator Co. 26/70
See also 6/3; 26/2
Specifications 26/16

Unit—Indirect Heat with Fan or Blower, Air Moistener, Washer and/or Filter

Arex Co. 26/61
Carrier Engineering Corp. 26/3
Clarage Fan Co. 26/2

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Heaters—Cont.

Unit—Indirect Heat with Fan or Blower, Air Moistener, Washer and/or Filter—Cont.

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De Luxe 26/16
Duotherm 26/2
Frigidaire Division, General Motors Corp. 26/7
G-E 26/9
General Electric Co. 26/9
Hold-Heet 26/15
Holland Furnace Co. 26/10
Moditherm 26/2
Mueller, L. J., Furnace Co. 26/14
Russell Electric Co. 26/15
Sturtevant, B. F., Co. 26/16
Tempered-Aire 26/20
Weathermaker 26/3
Weathermaking System 26/3
Wood, Gar, Industries, Inc. 26/20
York Ice Machinery Corp. 22/32; 26/21
See also 6/3; 26/78
Specifications 26/16

Unit and Cooler Combination

Air-O-Matic 26/19
American Blower Corp., Div. of American Radiator & Standard Sanitary Corp. 26/1
Carrier Engineering Corp. 26/3
Clarage Fan Co. 26/2
Climator 26/14
Duotherm 26/2
Fox Furnace Co., Div. of American Radiator & Standard Sanitary Corp. 26/6
Frigidaire Division, General Motors Corp. 26/7
G-E 26/9
General Electric Co. 26/9
Grinnell Co., Inc. 26/69
Hold-Heet 26/15
Kelvinator Corp. 26/12
May Oil Burner Corp. 26/13
Moditherm 26/2
Mueller, L. J., Furnace Co. 26/14
Russell Electric Co. 26/15
Sirocco 26/1
Sunbeam 26/6
Tempered-Aire 26/20
Thermolier 26/69
Weathermaker 26/3
Westinghouse Electric & Mfg. Co. 26/18
Williams Oil-O-Matic Heating Corp. 26/19
Wood, Gar, Industries, Inc. 26/20
York Ice Machinery Corp. 26/21
See Air Conditioning Controls; Controllers

Water—Coal Fired—Combination Boiler and Burner

Columbia Radiator Co. 26/25
Mueller, L. J., Furnace Co. 26/14
See also 26/24; 26/29

Water—Coal Fired—Garbage Burner Combination

See Incinerators—Garbage or Waste

Water—Electric

Westinghouse Electric & Mfg. Co. 22/15; 24/47
See also 26/71

Water—Electric—Combination Boiler and Heating Element—Manual or Automatic

Aquatherm 24/36
Dahlquist Mfg. Co. 24/36
Thermador Electrical Mfg. Co. 24/45
Turbo 24/36
Turbo-Aquatherm 24/36
Westinghouse Electric & Mfg. Co. 24/47

Water—Gas—Combination Boiler and Burner—Manual or Automatic

(See also Boilers—Heating—Gas Fired)

Aquatherm 24/36
Dahlquist Mfg. Co. 24/36
International Nickel Co., Inc. 24/39
Monel Metal 24/39
New Economatic 24/42
New Monarch 24/42
New Save-omatic 24/42
Pittsburg Water Heater Corp. 24/42
Ruud-DeSoto 24/44

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Heaters—Cont.

Water—Gas—Combination Boiler and Burner—Manual or Automatic—Cont.

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Ruud Mfg. Co. 24/44
Turbo 24/36
Turbo-Aquatherm 24/36
Watermatic 24/42
Whitehead 24/39

Water—Gas—Manual or Automatic

Dahlquist Mfg. Co. 24/36
International Nickel Co., Inc. 24/39
Monel Metal 24/39
Pittsburg Water Heater Corp. 24/42
Ruud-DeSoto 24/44
Ruud Mfg. Co. 24/44
Whitehead 24/39

Water—Indirect—Instantaneous or Non-storage

Chase Brass & Copper Co., Inc. 26/68
Eterno 24/48
Fre Flo 24/40
Patterson-Kelley Co. 24/41
Smith, H. B., Co. 26/33
Spencer Heater Co. 26/34
Sterling Engineering Co. 26/92
Taco 26/33; 26/34
Whitlock Coil Pipe Co. 24/48
See also 23/30; 26/35

Water—Indirect—Non-storage

See Heaters—Water—Indirect—Instantaneous or Non-storage

Water—Indirect Storage—Tank or Boiler

Dahlquist Mfg. Co. 24/36
Excelso Products Corp., Div. of American Radiator & Standard Sanitary Corp. 24/37
G & C 24/38
Gerstein & Cooper Co. 24/38
National Pipe Bending Co., Inc. 24/40
Patterson-Kelley Co. 24/41
Pittsburg Water Heater Corp. 24/42
Red Head 24/40
Taco Abbott 24/46
Taco Heaters, Inc. 24/46
Turbo-Aquatherm 24/36
Whitlock Coil Pipe Co. 24/48
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Water Instantaneous

See Heaters—Water—Gas Combination—Boiler and Burner; Heaters, Water—Indirect—Instantaneous or Non-storage

Water—Oil Fired—Combination Boiler and Burner—Manual or Automatic

(See also Boilers—Heating—Oil Fired)

Arco-Petro 26/31
Delco Appliance Corp. 26/4
Delco-Heat 26/4
Electrol Incorporated 26/5
Electrol-American 26/5
Electrol-Kewanee 26/5
G-E 26/9
General Electric Co. 26/9
Genii 26/32
Gilbert & Barker Mfg. Co. 26/8
Johnson, S. T., Co. 26/28
Kelvinator Corp. 26/12
May Oil Burner Corp. 26/13
Nu-Way Corp. 26/32
Oil-O-Matic 26/36
Petroleum Heat and Power Co. 26/31
Quiet May 26/13
Taco 26/34
Williams Oil-O-Matic Heating Corp. 26/36
Wood, Gar, Industries, Inc. 26/20

Water—Swimming Pool

See Specific Type of Heater

Heating Systems

Bathroom

See Heaters—Air—Electric—Auxiliary or Bathroom

Greenhouse and Conservatory

See Greenhouses and Conservatories; Specific Type of Heating System

Heating Systems—Cont.

Hot Water

Beaton & Cadwell Mfg. Co. 26/74
Cadwell 26/74
Hitchings & Co. 23/36
Perkheater 23/36
Thrush, H. A., & Co. 26/83
See also 23/37

Hot Water—Circulators for

Penberthy Injector Co. 26/91
Sterling Engineering Co. 26/92
Thrush, H. A., & Co. 26/83
See also 24/31

Vacuum—Vapor and Modulation

B&J 26/77
Barnes & Jones Inc. 26/77
Differential-Vacuum-Heating 26/78
Dunham, C. A., Co. 26/78
Improved 26/84
Moderator 26/84
Webster, Warren, & Co. 26/84

Warm Air

See Furnaces—Warm Air

Warm Air —Forced Circulation

(See also Furnaces—Warm Air—Forced Circulation)

Holland Furnace Co. 26/10
Vaporaire 26/10

Heating and Ventilating

Apparatus

See Specific Item as: Heaters; Heating Systems; Fans; Blowers; Ventilators; Dampers or Registers; etc.

Units Combined

See Heaters—Air Conditioning—Unit

Hinges

Butt—Ball Bearing

Rixson, Oscar C., Co. 18/29

Butt—Double Acting

Bommer Spring Hinge Co. 18/26
Chicago Spring Hinge Co. 18/27
Ever Ready 18/26
Milwaukee Stamping Co. 18/28
Nu-Jamb 18/28
Simplex 18/27
Triplex 18/27
See also 18/25

Butt—Spring

See Hinges—Spring Butt

Casement—Cleaning Hinge

See Hardware—Cleaning Hinge—Casement Window

Casement—Sash Lifting

Grant Pulley and Hardware Co. 18/34
Queen 18/34

Casement Window

See Hardware—Casement Window

Checking

See Checks and Closers—Door

Closet Seat

See 18/27

Garage Door

R-W 18/22
Richards-Wilcox Mfg. Co., Inc. 18/22

Gate—Spring Pivot or Spring Butt

Bommer Spring Hinge Co. 18/26
Chicago Spring Hinge Co. 18/27
Lawson-Milwaukee 18/28
Milwaukee Stamping Co. 18/28
Sagless 18/27
Simplex 18/27
Triplex 18/27
Universal 18/28

Invisible

Soss Mfg. Co., Inc. 18/31

Lavatory and Toilet Door

Bommer Spring Hinge Co. 18/26
Chicago Spring Hinge Co. 18/27

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Hinges—Cont.

Lavatory and Toilet Door—Cont.

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Lawson-Milwaukee 20/16
Lawson Universal 18/28
Mills Co. 20/7
Milwaukee Stamping Co. 18/28
Sagless 18/27
Sanymetal Products Co., Inc. 20/17
Triplex 18/27
Weis, Henry, Mfg. Co., Inc. 20/18
Specifications 18/28; 20/17

Pivot—Ball Bearing

Bommer Spring Hinge Co. 18/26
Lawson-Milwaukee 18/28
Matchless 18/28
Milwaukee Stamping Co. 18/28
Sanymetal Products Co., Inc. 20/17
Shelby Spring Hinge Co. 18/30

Spring Butt

Bommer Spring Hinge Co. 18/26
Chicago Spring Hinge Co. 18/27
Ever Ready 18/26
Lawson-Milwaukee 18/28; 20/16
Milwaukee Stamping Co. 18/28
Simplex 18/27
Triplex 18/27

Spring Pivot—Floor

Bommer Spring Hinge Co. 18/26
Chicago Spring Hinge Co. 18/27
Lawson-Milwaukee 18/28; 20/16
Matchless 18/28
Milwaukee Stamping Co. 18/28
Premier 18/27
Relax 18/27
Shelby Spring Hinge Co. 18/30

Spring Pivot—Floor—Checking

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G-E 27/8
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P&S-Despard 27/10
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P&S-Despard 27/10
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Bel-Sun-Lite 28/12
Bright Light Reflector Co., Inc. 28/11
Celestialite 28/4
Century Lighting Equipment, Inc. 28/13
Curtis Lighting, Inc. 28/14
Day-Brite Reflector Co. 28/15
Garcy Reflectors, Div. of Garden City Plating & Mfg. Co. 28/16
Gleason-Tiebout Glass Co. 28/4
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Belson Mfg. Co. 28/12
Bel-Sun-Lite 28/12
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Curtis Lighting, Inc. 28/14
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General Electric Co. 28/17
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Brick, Clay, Cement, etc.

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I-R 26/11
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(*Including: Air, Car, Creosote, Drip, Elevator, Gasoline, Grain, Gravity, Hot Water, Molasses, Oil, Pressure, Rendering, Run Down, Sand, Ship, Slush, Sprinkler, Sugar, Tar, Varnish, Water, etc.*)
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Hold-Heet 26/15
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Trojan 22/33
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See Closet—Seats

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See Closet—Tank Fittings

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See Coolers—Drinking Water

Cooling Systems
See Refrigerating and Ice Making—Machinery and Plants; Refrigerating Machines

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Myers, F. E., & Bro. Co. 24/32
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Flamingo 3/40
Horn, A. C., Co. 4/9
Hydrocide 4/18
Hydratite 4/9
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Rex 14/25
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Sonneborn, L., Sons, Inc. 4/18
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Aquabar Waterproofing Products, Inc. 4/3
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B.C.C. 4/6
Building Chemicals Corp. 4/6
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Horn, A. C., Co. 4/9
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Asbestile 8/7
Barber Asphalt Co. 8/2
Barrell, William L., Co., Inc. 8/20
Barrett Co. 8/3
Bird & Son, inc. 8/4
Brisk Waterproofing Co. 4/5
Carey, Philip, Co. 8/5
Celotex Corp. 13/16
Cheney Co. 8/50
Con-Ser-Tex 8/20
Copper Armored Sisalkraft 13/1
CopperKote 8/50
Ferox 13/16
Genasco 8/2
J-M 8/7
Johns-Manville 8/7
Koppers Products Co. 8/8
Larson 4/5
Minwax Co., Inc. 4/12
Neponset 8/4
Ruberoid Co. 8/18
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Aquabar Waterproofing Products, Inc. 4/3
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Aquatite 4/3
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Hydrocide 4/18
Konkerit 4/20
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Master Builders Co. 4/13
Medusa Portland Cement Co. 3/38
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Building Chemicals Corp. 4/6
Ferritex 4/21
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Horn, A. C., Co. 4/9
Ironco 4/3
Master Builders Co. 4/13
Metallic 4/13
Metalon 4/9
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(For Surface Treatments or for use with Membrane Systems)

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Amurseal 4/2
Anti-Hydro Waterproofing Co. 4/2
Antydamp 16/29
Aquabar Waterproofing Products, Inc. 4/3
Aquaseal 16/21
Aridclear 4/2
Aridtite 4/2
Art-Roc 4/21
Artstone Rocor Corp. 16/6
B.C.C. 4/6
B-T 15/9
Barber Asphalt Co. 8/2
Barrett Co. 8/3
Berry Brothers, Inc. 16/8
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BriXope 4/6
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Cementex 4/3
Cementhide 17/1
Cem-Gard 16/13
Clear Coat 4/3
Clerseal 4/1
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Dehydratine Nos. 1, 2, 2A, 3, 4, 10 4/9
Dens-tect 4/23
Detroit Graphite Co. 16/13
Driwal 4/4
du Pont de Nemours, E. I., & Co., Inc. 16/15
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Flintkote Co. 8/6

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Medusa Portland Cement Co. 3/38
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Obelisk Waterproofing Co. 4/15
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Plastic XC 8/3
R.I.W. 4/20
Reardon Co. 16/28a
Ric-wiL 26/97
Rocor 16/6
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Self Healing Bridge Cement 4/20
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Sherwin-Williams Co. 16/29
Sonneborn, L., Sons, Inc. 4/18; 16/4
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Stanwaco 4/19
Static 8/6
Stearox "30" 4/13
Stone Backing No. 3B 4/3
StoneTex 4/21
Stonewall Plastic 13/42
Stuccotex 4/21
Sureseal 4/14
Symentrex 4/9
Tar-Rok 8/3
Toch Brothers, Inc. 4/20
Toxloxpore 4/20
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Pecora Paint Co., Inc. 3/42
Sonneborn, L., Sons, Inc. 4/18
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Bruce, E. L., Co. 15/51
du Pont de Nemours, E. I., & Co., Inc. 16/15
Glastex 4/3
Hil-Brite 16/2
Hil-Kote 16/2
Hillyard Chemical Co. 16/2
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Athey Co. 19/14
Barland Weatherstrip Material Co. 19/15
Ceco 3/69
Chamberlin Metal Weather Strip Co., Inc. 19/16
Concrete Engineering Co., Inc. 3/69
Flexo-Seal 19/20
Higgin Mfg. Co. 19/6
In-Dor-Seals 19/16
Knight-Triple-Interlocking 19/15
Master Metal Strip Service 19/17
Pine Craft 11/19
Protex Weatherstrip Mfg. Co. 19/19
Pyramid Metals Co. 19/18
Reese Metal Weather Strip Co. 19/20
Sill-Dor-Seals 19/16
Slide Lock 3/69
Spanjers, A. J., Co. 19/21
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Barland Weatherstrip Material Co. 19/15
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Chamberlin Metal Weather Strip Co., Inc. 19/16
Master Metal Strip Service 19/17
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Pyramid Metals Co. 19/18
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Hope's Windows Inc. 11/9
Kawneer Co. 11/10
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Pomeroy, S. H., Co., Inc. 11/7
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Andersen Frame Corp. 11/14
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Fenestra 11/5
Fenmark 11/5
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Hope's Windows Inc. 11/9
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Fenestra 11/5
Fenmark 11/5
Kawneer Co. 11/10
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Fenestra 11/5
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Detroit Steel Products Co. 11/5
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Fenestra 11/5
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Fenestra 11/5
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- SECTION - 10

DOORS · · METAL AND WOOD
- SECTION - 10

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METAL—INCLUDING FOLDING, REVOLVING, ROLLING, SLIDING, ETC.

MEMORANDA

AETNA STEEL PRODUCTS CORPORATION

Manufacturers of Hollow Metal Doors and Trim, Elevator Enclosures and Metal Covered Doors

MAIN OFFICE AND PLANT
87-109 Richardson Street
BROOKLYN, N. Y.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

HOLLOW METAL DOORS, JAMBS and TRIM; STEEL DOOR FRAMES; ELEVATOR, STAIR and DUMBWAITER ENCLOSURES; KALAMEIN DOORS, FRAMES and TRIM.

Also Tin Clad Doors and Hardware and Cold Rolled Shapes.

Experience

We have been manufacturing these products for over thirty-five years with an organization trained to give service. Aetna products are especially adapted for installation in slum clearance projects, apartment houses, hospitals, schools, hotels, department stores, loft and office buildings and theatres.

Plant and Facilities

Aetna is housed in an absolutely modern plant of brick and steel construction, consisting of more than 60,000 sq. ft. of manufacturing space. Recent additions of the newest and most modern equipment have been added to insure an excellence of product to satisfy the needs of the most discriminating Architect, Contractor, and Engineer.

Hollow Metal Doors

Description—Aetna Doors are constructed of the best quality open hearth, full cold rolled, full pickled, patent levelled sheet steel. Stiles and rails are formed of No. 18 U. S. standard gauge and No. 20 gauge for the panels and mouldings. Panel filler consists of a ⅜-in. approved filler, and stiles and rails are filled solid with asbestos air-cell or cork, to deaden the metallic sound. All joints between stiles and rails, and the mitres of all panel mouldings are welded and made perfectly smooth and invisible. The necessary hardware cutouts and reinforcements are provided for all hardware.

Steel Door Frames

Aetna Combination Integral Frames are formed or rolled of No. 12, 14 and 16 U. S. gauge sheet steel. Head and jamb are continuously welded, and steel reinforcements are provided for hardware cutouts of sufficient thickness to insure rigid construction. Steel angle spreaders are welded at bottom to insure parallel alignment and anchors of No. 16 gauge steel are provided to bond frames solidly to walls.

Elevator Enclosures

Aetna Elevator Entrances are furnished and erected complete, including hollow metal door with vision panels, where required; combination buck, saddle, facia, closer supports as required, and all necessary hardware. All electrical equipment by others.

Metal Covered Doors

Aetna Kalamein Doors are 1¾ in. thick and constructed of thoroughly dried solid white pine cores, dressed and covered with No. 24 gauge patent levelled furniture steel sheets.

Cores for stiles and rails are joined and mortised and tenoned in approved manner. Metal is drawn around and clinched into wood cores to insure perfectly flat surfaces.

A feature of this Kalamein door is the No. 20 gauge cold rolled to shape panel moulding, which is mitred, welded and attached so that no fastenings are exposed.

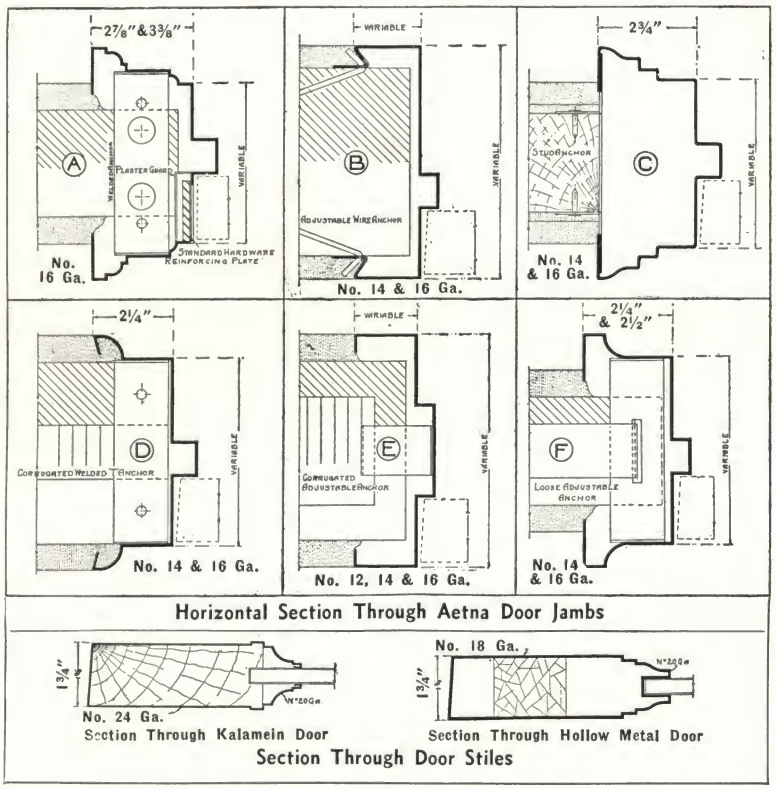
Label Service

Combination integral steel door frames, hollow metal doors and metal covered doors can be furnished to meet the requirements of the National Board of Fire Underwriters and bear their approved label.

Finish

All materials are thoroughly cleaned of all oil, grease, dust, rust, and other impurities and then given at least one shop coat of air dried best metallic primer.

Holllow metal doors receive a special finish, consisting of a baked enamel prime coat, and if required, can be furnished in any plain color or grain finish to meet individual requirements; such finish to consist of at least six coats, each baked at the proper temperature and sanded, the last coat being rubbed to an egg shell gloss.



Partial List of Installations

BUILDING	LOCATION	CONTRACTOR	ARCHITECT
Knickerbocker Village	East Side, New York	Fred F. French Co.	John S. Van Wart
Bank of Manhattan Co. Building	40 Wall Street, New York	Starrett Bros. & Eken	Craig Severance
Timothy Dwight College, Yale University	New Haven, Conn.	Marc Eidlitz & Son, Inc.	James Gamble Rogers
Marshall Field Apartments	Chicago, Ill.	O. W. Rosenthall, Cornell Co.	Andrew J. Thomas
Convention Hall and Theatre	Asbury Park, N. J.	Turner Construction Co.	Warren & Wetmore
Grasslands Hospital	Valhalla, N. Y.	Lustig & Weil	Walker & Gillette
Miami University	Oxford, Ohio	Clarence L. Knowlton	Harsh & Davies
Veterans Administration Facility	Togus, Me.	Charles T. Wills, Inc.	Veterans Administration
College of Industrial Arts	Denton, Tex.	Henger Construction Co.	Shirley Simons
Hotel Lexington	New York, N. Y.	Turner Construction Co.	Schultze & Weaver
Virginia Polytechnic Institute	Blacksburg, Va.	J. A. Jones Construction Co.	Carneal, Johnston & Wright
Worcester City Hospital	Worcester, Mass.	Geo. A. Fuller Construction Co.	Stevens, Curtin & Mason
Indianapolis Housing Project	Indianapolis, Ind.	N. P. Severin Company	William Earl Russ & Merritt Harrison

ART METAL CONSTRUCTION COMPANY

Hollow Metal Division

JAMESTOWN, N. Y.

For Branch Offices, see Bank, Office and Library Equipment Section

For Metal Office Partitions, Kitchen Cabinets, Bank, Office, Library and Hospital Equipment, and Lockers, see File Index

ART METAL DOORS AND TRIM IN STEEL AND BRONZE

Products

HOLLOW METAL DOORS and BUILDING TRIM, ELEVATOR, STAIR and DUMB WAITER ENCLOSURES, CORRIDOR and OFFICE PARTITIONS and CABINET WORK in STEEL and BRONZE.

Types of Doors

The types illustrated in this catalog cover Art Metal standard construction, with profiles carefully designed and selected to conform to the best in architectural detail.

Art Metal facilities make possible the fabrication of doors in any special type and profile where conditions warrant.

Art Metal
Jamestown, New York
U.S.A.

TRADE-MARK

Casings and Mouldings

All mouldings are made of specially selected bronze or steel stock and carefully rolled through accurate dies giving a sharp profile. ART METAL CONSTRUCTION COMPANY has unusual facilities for producing special moulding to architect's designs where standard shapes will not meet requirements.

Service

Competent sales engineers are maintained at the Home Office and at all Branch Offices. Their services are offered to architects, contractors and builders without obligation.

Notes Regarding Details

Combination Buck and Jamb—For gauges see cuts. Can be made as heavy as 10-gauge except Type HH1. Wall thickness and reveal variable. Regular 3x10-in. x 18-gauge corrugated adjustable anchors shown on Types B2 and HH1 for brick and tile walls. Perforated strap anchors for concrete walls shown on Type C2. Anchors required for frames taking Underwriters' Labels shown on Type E1. All types shown meet requirements for Underwriters' labeling.

Note: Frames which are to go in fire walls must have stops ¾ in. high, all others ⅝ in. high. Temporary wood spreaders regular with 2x2x⅛-in. angle at bottom for bolting to floor construction.

Permanent steel channel spreaders 2x¾ in. x .0625 gauge furnished where required.

Combination Buck and Jamb with Integral Trim—These frames available in following gauges. Type F2 and G2 in 14 or 16 gauge. Type RF2 in 16 gauge only, wall thickness 4½ and 5½ in. Type H2 in any gauge with spotwelded moulding. Moulding profile variable (see moulding catalog) for other suitable mouldings. Dimensions where shown are fixed, others are variable. Regular adjustable anchors shown; other anchors as shown above may be used. Corners are mitred and welded. Spreaders as noted above. These types all permit labeling by Underwriters.

Rough Buck—Cabinet Jamb—Trim—Rough bucks 16 to 10 gauge. Cabinet jambs 18 or 16 gauge. Optional clipped on casing and scribe. See moulding catalog for complete section with or without metal plinths. All dimensions variable. Rough buck to be either knock down or welded in frame. Steel or wood spreaders.

Swing Doors—Fire Underwriters' Requirements

Class "A"—Units in division walls between separate buildings or sections of building.

Limitations—swinging type—single doors for openings not to exceed 4x7 ft. and doors in pairs not to exceed 5x7 ft., all-steel with approved hardware.

Class "B"—Units in enclosure to vertical communications through building.

Limitations—swinging type—single doors for openings not to exceed 4x10 ft. and doors in pairs not to exceed 8x10 ft., all-steel with approved hardware.

Doors exceeding 8 ft. in height to be provided with three-point locking mechanism same as described for Class "A."

Class "C"—Units in corridor and room partitions.

Limitations—swinging type—single door for openings not to exceed 4x10 ft. and doors in pairs not to exceed 8x10 ft., steel or ¼-in. wired glass panels with approved hardware.

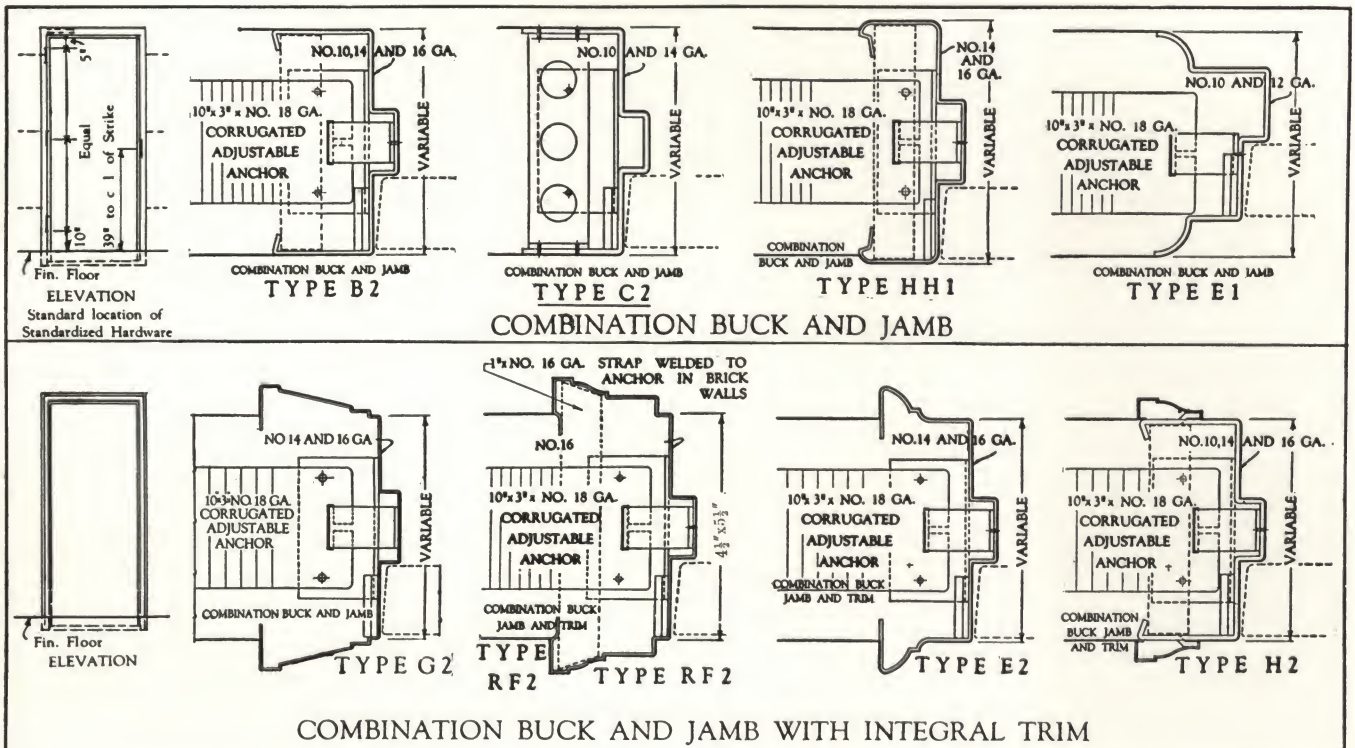
Doors exceeding 8 ft. in height to be provided with three-point locking mechanism as described for Class "A."

Class "D" and "E"—Openings in exterior walls and to fire escapes.

Limitations—swinging type—single doors not to exceed 4x10 ft., pairs of doors not to exceed 8x10 ft., except for fire escape which cannot exceed 6x10 ft.

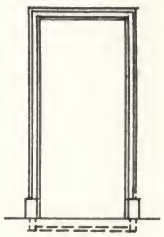
Doors exceeding 8 ft. in height to be provided with three-point locking mechanism as described for Class "A."

Locks for fire escape doors to be such that doors can be opened out from inside by single operation and cannot be locked against a person wishing to leave the building.

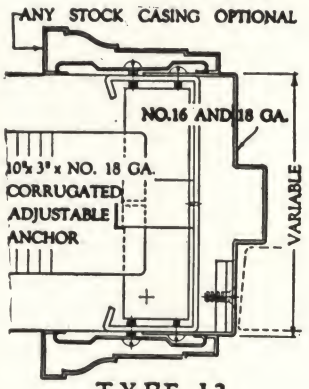


· DOORS · FRAMES

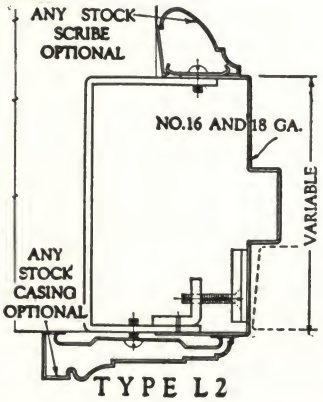
ROUGH BUCK CABINET JAMB TRIM



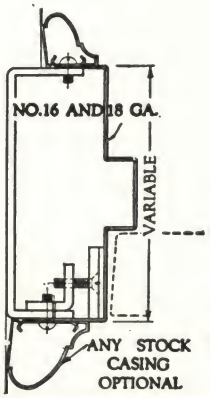
ELEVATION



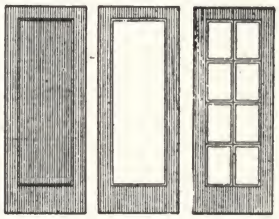
TYPE J2



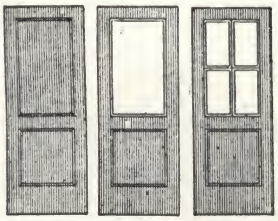
TYPE L2



TYPE N2



·A1· ·A2· ·A4·



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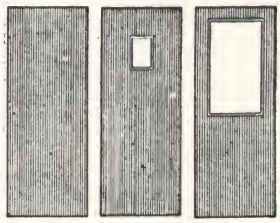
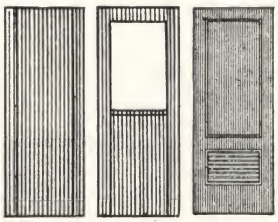
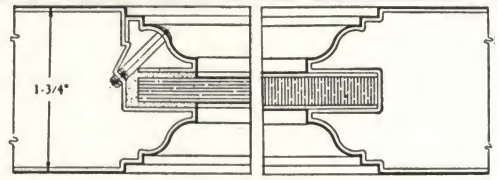


·A26· ·A26A· ·A27·



A26C· ·A27B· ·A32·

STYLES OF DOORS



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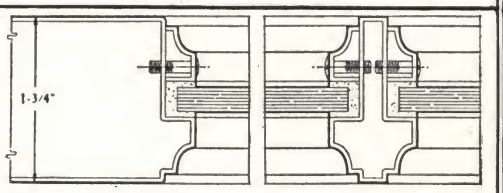

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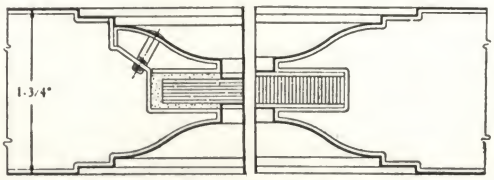

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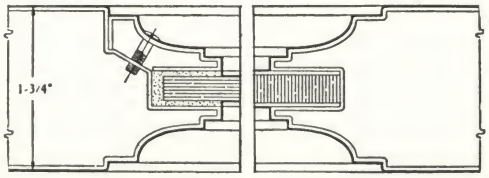

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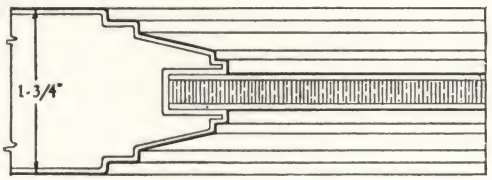
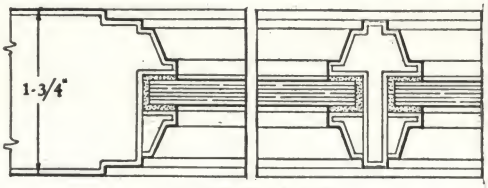
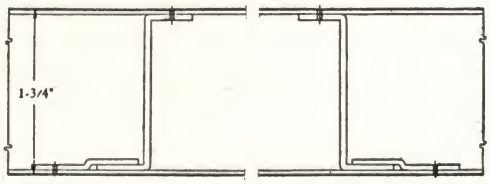


·TYPE·107
WITH STEEL PANELS



TYPE·107
WITH GLASS PANELS



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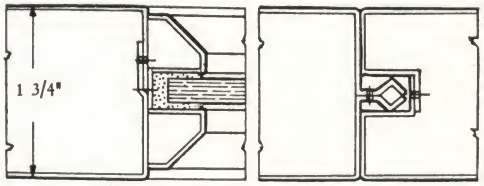

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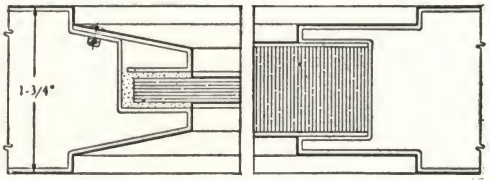
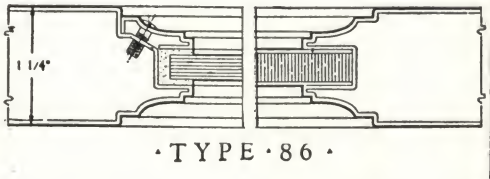


· TYPE· 87 ·



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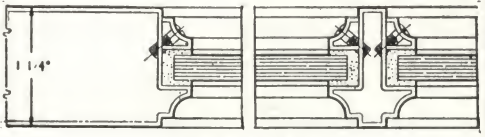


· TYPE· 59 ·

TYPES OF DOORS

ART METAL ELEVATOR AND DUMB WAITER ENCLOSURES

The plate illustrations cover all the styles of elevator enclosures in general use and are shown with combination buck and jamb frames.

Any of these styles can be furnished in rough buck or structural buck and finished jambs with casings or scribe mouldings as required.

Dumb Waiter Enclosures—Dumb waiter enclosures of any size, with frames of either combination buck and jambs or buck and finished jambs, with or without casings can be supplied.

Unless otherwise specified the pulleys, weights and chains will be furnished with the units.

Bronze Work—The foregoing description covers our standard products in steel. Bronze work is executed similarly, except that materials are two gauges heavier, joints are made by riveting, screwing and brazing, and finish is produced in accordance with standard methods for durability and desired effects.

Finish—Material is thoroughly cleaned, primed and filled, followed by subsequent coats as required to produce a durable finish of color required. Each coat is uniformly applied, baked and sanded with final coat rubbed to an eggshell gloss. Prime finish consists of ground-coat filler and dipped or sprayed finish coat.

SLIDING ELEVATOR DOORS—Fire Underwriters' Requirements

Class "B" and "C"—Horizontally sliding doors for elevator shafts or room partitions of any of the following arrangements:

Maximum size 8x8 ft.	Two-speed and stationary panel
Single-speed—maximum size 4x8 ft.	Three-speed
Single-speed and stationary panel	Center parting
Two-speed	Two-speed center parting

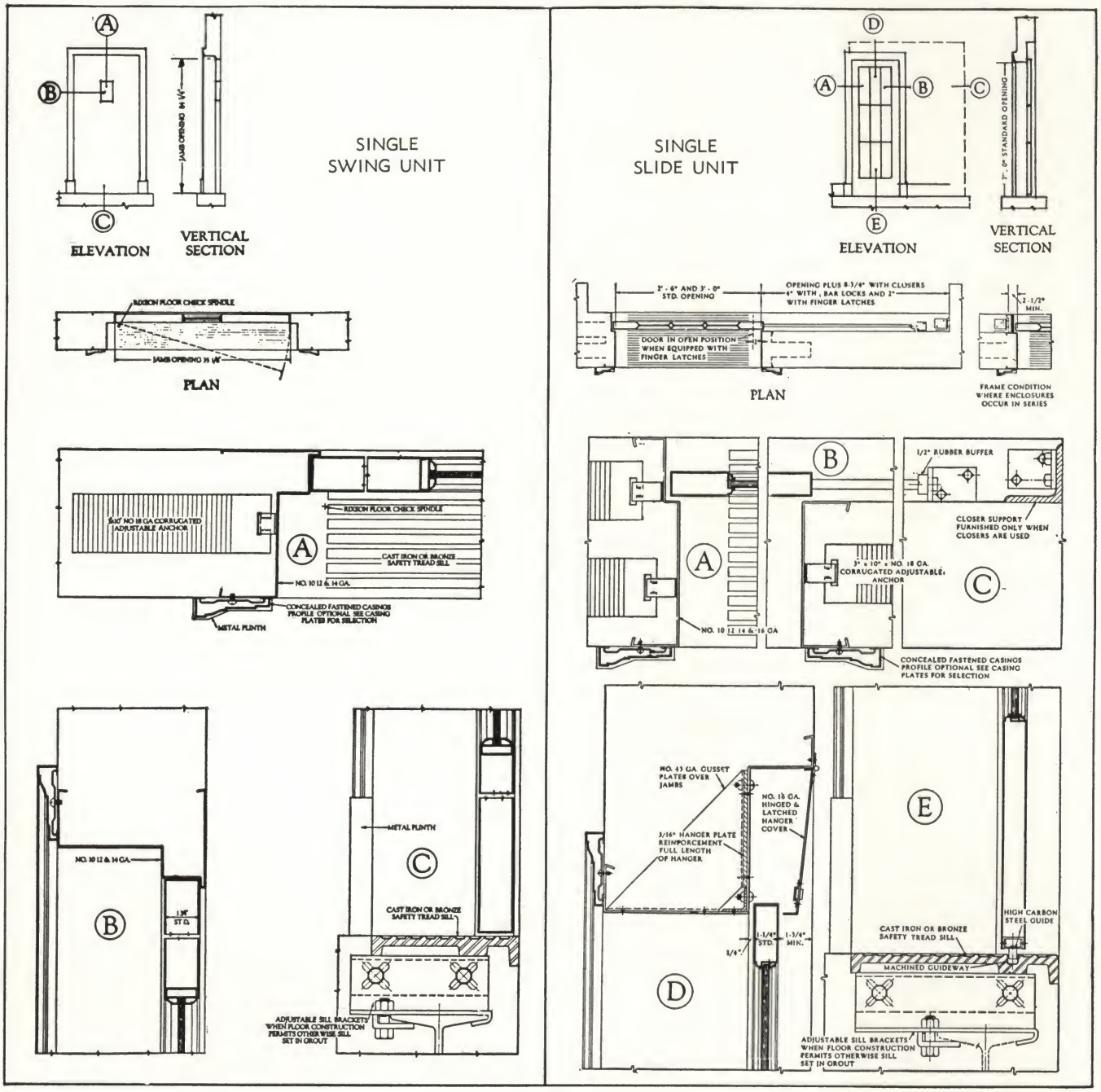
The doors when closed have engaging interlocking members at the sides and head and are operated by arms which hold them in a closed position. Sill may be cast iron or bronze, not less than ½ in. thick.

Class "B" may have vision panel ¼-in. wire glass, exposed area not to exceed 12 in. Where two lights of glass are used, the combined exposed area not to exceed 100 sq. ins. and neither dimension to exceed 12 ins.

Class "C" may have ¼-in. wired glass panels, the total exposed area of any individual light not to exceed 1,296 sq. ins. Where peep hole is cut in a recessed panel door with Class "C" label, the exposed area of any individual cutout not to exceed 144 sq. ins. and neither dimension to exceed 12 ins.

Any standard arrangement of steel and glass panels may be used for Class "C." Class "B" must be all-steel, except limited peep hole as described above.

Hardware—Hangers and closers to be of approved type.

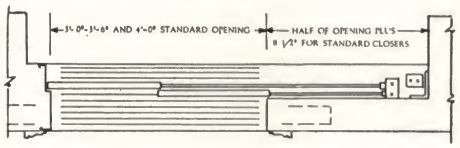


ELEVATOR ENCLOSURES

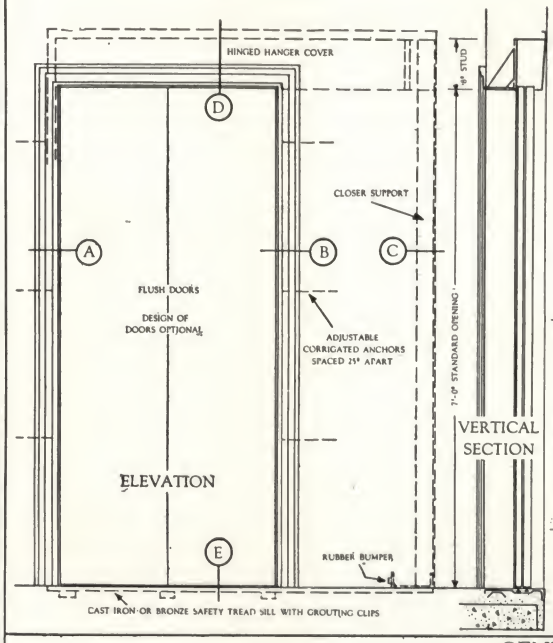
Art Metal
Jamestown New York
U.S.A.

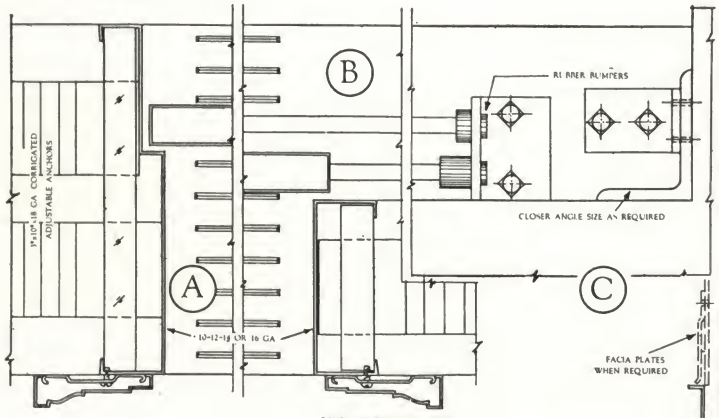
TWO SPEED UNIT

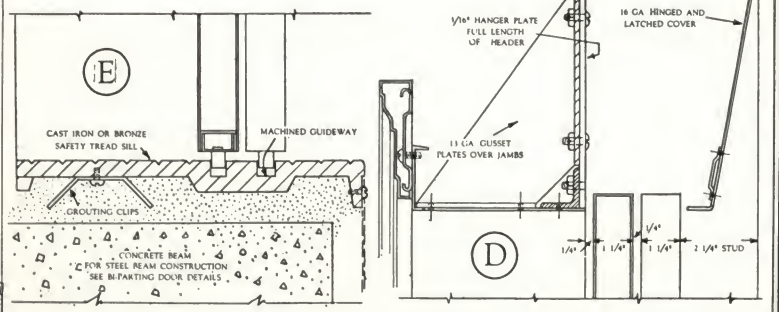
DETAILS FOR CONCRETE BEAM CONSTRUCTION



PLAN

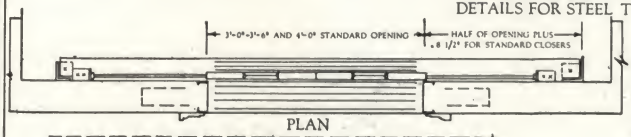




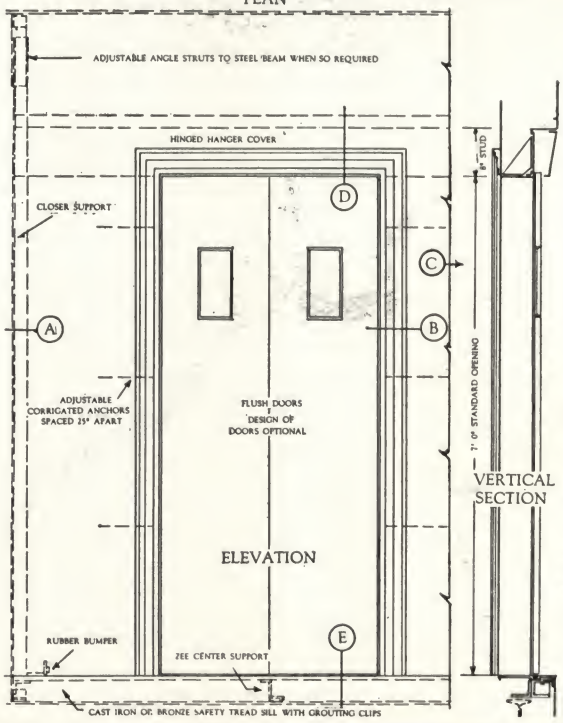


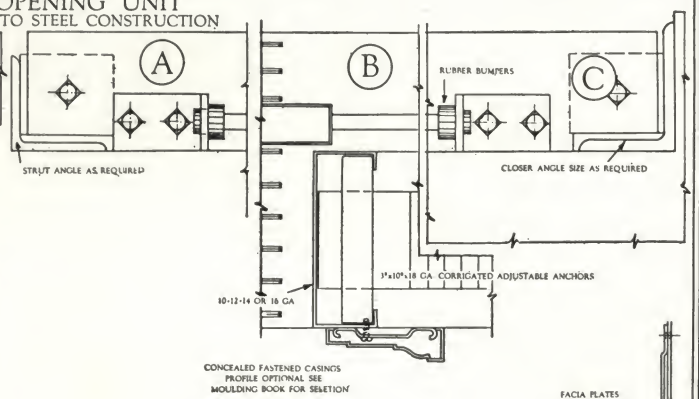
CENTER OPENING UNIT

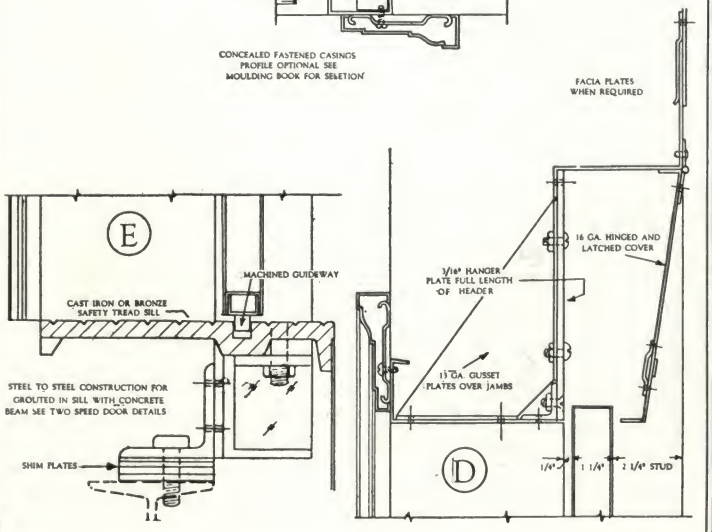
DETAILS FOR STEEL TO STEEL CONSTRUCTION



PLAN







DAHLSTROM METALLIC DOOR COMPANY

Manufacturers in Steel, Bronze, Aluminum, Monel Metal and the White Metals of Doors, Trim Elevator Entrances, Partitions, Conduo-Base and Mouldings

EXECUTIVE OFFICES AND FACTORIES

JAMESTOWN, N. Y.

NEW YORK OFFICE

475 Fifth Avenue, New York, N. Y.

REPRESENTED IN ALL PRINCIPAL CITIES

For Dahlstrom Adjustable Steel Partitions and Conduo-Base, see File Index

Products

Manufacturers of METAL DOORS and METAL TRIM; ELEVATOR ENTRANCES.

Also Conduo-Base, General Trim for office buildings, hotels, apartments, hospitals, schools, banks, theaters; Hose Cabinets and Switch Box Panels and Partitions.

Catalogues on any Dahlstrom Product furnished on request.

Dahlstrom Metal Doors and Trim

Design—Metal doors originated by the founder of this Company. Thirty years of designing and manufacturing doors and trim to meet various conditions have given Dahlstrom products the well-earned title of "The Specified Standard."

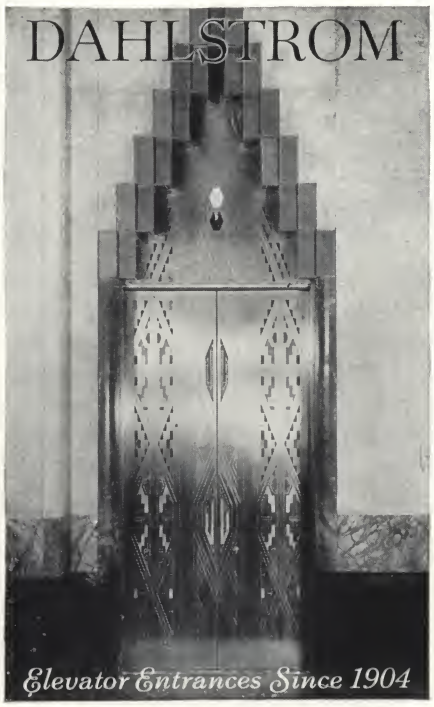
Construction—Dahlstrom Metal Doors and Trim have during a period of thirty years proven their fire-retarding value.

All joints are carefully welded. Reinforcements provided where necessary are also welded to the construction members. The design of Dahlstrom Metal Doors insures rigidity, stability, fire protection and elegance.

Door frames are fabricated from Nos. 16 to 11 gauge metal according to the size of the opening and the service required.

Finish—All surfaces are thoroughly cleaned before finish is applied. Each coat of paint or enamel is carefully baked and properly treated to secure the superior finish for which Dahlstrom products are noted. The same care and attention is given all finishes, whether plain colors, stipples or reproductions of wood graining. All material for finishing is carefully tested in our laboratories.

Quality—Dahlstrom products are internationally known. Only the expert workmanship and first-class materials entering into their manufacture can sustain this reputation.



Union Trust Building, Detroit, Mich.

Dahlstrom White Metal

White metal, known as KA-2 or Chrome Nickel Steel, Aluminum, Monel Metal, Nickel Silver, has forged to the front rank claiming a place with copper or bronze and other kindred metals.

The architect long restrained by convention and monetary consideration limited his interior decorative treatment to the first floor lobby. The upper or typical floors were considered for the most part utility and not necessarily to attract attention. It is now possible to embellish these upper floor lobbies and corridors with hollow metal using the different white metals and conforming with the present day modernistic trend in design, even allowing opportunity for detailed ornamentation.

White metal can be etched satisfactorily and this work to some extent, has replaced castings. In brief, the results are highly commendable to Architects and Manufacturers in that they have brought out the fine characteristics of this new metal.

Northern Life Tower, Seattle, Wash.

ESTABLISHED 1911

ELLISON BRONZE COMPANY, INC.

Manufacturers of Ellison Balanced Doors

JAMESTOWN, N. Y.

For our pages on Bronze and Aluminum Products, and Louvre Ventilators, see File Index

ELLISON BALANCED DOORS DESIGNED FOR EASY OPENING AGAINST STRONG WIND PRESSURE AND SUCTION

This door is designed to meet the demand for an entrance door that can be easily opened against strong wind pressure or suction, or both, from inside and/or outside, under all conditions.

It is made in bronze, aluminum or steel for use at entrances and vestibules of Office and Public Buildings, Banks, Schools, Libraries, Department Stores, etc.

Principle of Operation

When the door is being opened, the pull handle edge of the door swings outward *against* the wind and the opposite edge swings inward *with* the wind and the entire door moves easily and quickly to one side of the door opening.

The surface of this door is subjected to the same wind pressure as the ordinary hinged type, but due to the fact that the two edges swing in opposite directions, the pressure on the inswinging surface counterbalances the pressure on the outswinging surface.

The counterbalancing of the door makes necessary only a slight spring action in the closing device and the door can be opened under any condition of weather with a minimum of effort.

The Fifth Avenue Entrance to Rockefeller Center, New York, N. Y.

Quick Closing Minimizes Heat Losses

Because of this balancing action, this door when released closes quickly, without slamming, and stays closed, preventing thereby the heat losses occasioned by the slow closing of the ordinary hinged or pivoted door against pressure or suction.

Facilitates the Handling of Large Crowds

The easy opening and quick closing of this door permits an uninterrupted flow of traffic, in any wind and weather condition.

Construction Features of Ellison Balanced Doors

These doors are the regular Ellison No. 11 gauge, welded bronze or aluminum doors. Steel doors and jambs are made of No. 16 gauge chrome nickel steel or copper bearing steel with baked enamel finish.

Operating Hardware

The operating hardware consists of top and bottom arms connected by a substantial vertical shaft inside the jamb. The lower arm carries the weight of the door. The upper arm acts as a guide and is connected with the door closer which is located within the top edge of the door. This closer is of the spring and liquid type and is readily accessible for adjustments.

In the head jamb is located a simple and easily operated device for holding the doors open when desired.

All bearings are sturdy; some are ball bearings and others are steel disks, self-aligning, insuring constant ease of operation and long wear.

Other Hardware

Any standard locks, pulls, push plates and flush bolts, to match other hardware in building, can be used with these doors, and are furnished and installed by us.

Doors Supplied as a Self-contained Unit

These doors, including plain side and head jambs, mullions and saddles, equipped with Ellison Balanced Door Hardware are regularly furnished by us as a self-contained unit. Special designs and sizes of doors can be made to architect's details.

These units are designed to be easily built into any architectural treatment surrounding the doors, which treatment can be furnished and installed by others, although we are equipped to furnish any architectural or ornamental bronze or aluminum, and hollow metal work. (See our page on Bronze and Aluminum Products.)

Operating hardware is not sold separately by us for application and installation by others. The unit is made and installed by us complete.

A Few Installations

Building	Location	Architect
Rockefeller Center Buildings	New York, N. Y.	Reinhard & Hofmeister, Corbett-Harrison & MacMurray, Hood & Foulihoux
Fox Department Store	Hartford, Conn.	Taussig & Flesch
Provident Institution for Savings	Boston, Mass.	James Purdon
Rundell Memorial Library	Rochester, N. Y.	Gordon & Kaelber
Lockwood Library, University of Buffalo	Buffalo, N. Y.	Edward B. Green & Sons
Masonic Temple	Columbus, Ohio	George Bulford
Dormitory, Miami University	Oxford, Ohio	Harsh & Davies
W.G.N. Studio, Tribune Tower	Chicago, Ill.	John H. Howells, Hood & Foulihoux, Architects, Leo J. Weisenborn, Associate Architect
City Hall	Sioux Falls, S. D.	Jos. Schwartz and Harold Spitznagel
Farmers National Bank	Pittsburgh, Penna.	
Pacific Telephone & Telegraph Building	Seattle, Wash.	

FIRECRAFT DOOR CO.

TELEPHONE
Yards 2410

3319 Wallace Street, CHICAGO, ILL.

REPRESENTATIVES IN PRINCIPAL CITIES

Products

PASSENGER ELEVATOR DOORS, HOLLOW METAL DOORS AND FRAMES, "ALSTELE" FIRE DOORS, METAL DOOR AND WINDOW ACCESSORIES. Also collapsing and wire gates, storeroom doors, industrial doors, freight elevator and dumbwaiter doors.

Passenger Elevator Entrance Units

Complete elevator entrance units are furnished, including hollow metal doors with vision panels or divided lights with glass, self-aligning removable composition guides, non-slip machine grooved sills, pressed steel frames with angle struts to ceiling, hanger housings, facia plates and trim. Swinging door units are equipped with floor or overhead checks with flush latch on shaft side and knob on corridor side.

Single Swing Elevator Unit, Design No. 205

All doors are rigidly constructed as specified below for hollow metal doors. Flush paneled doors are fabricated from two sheets of patent leveled steel separated by channels welded the entire length of doors and cross-braced at top and bottom. Glass for vision panels is set in rubber channels and held in place by means of cast frame or removable mouldings.

Special attention is given to the closer and locking mechanism on each installation so that reinforcements are properly located.

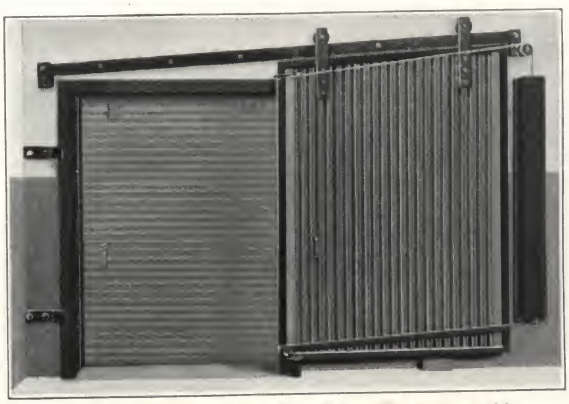
Hollow Metal Doors and Frames

Description—Stiles and rails formed of 18 gauge patent leveled, cold rolled furniture steel. Asbestos air cell blocks are inserted in all stiles and rails so as to prevent metallic sound. Panels are constructed of two sheets of 18 gauge steel separated by ¼-in. asbestos millboard. Drawn or pressed 20 gauge mouldings are carefully mitered and fitted. The panels and cross rails are locked into the stiles with lock strips and welded so as to make doors rigid and strong. All joints and seams are made perfectly smooth and invisible. Heavy hardware reinforcements are invisibly welded in position. All hardware is carefully fitted before doors are inspected and shipped.

Door frames, consisting of rough bucks, cabinet jambs and trim or integral frames are formed from 12 to 16 gauge steel, depending on the service required and the size of openings.

This construction meets the requirements of the National Board of Fire Underwriters' and Factory Mutuals and doors and frames bear their labels when so specified.

Materials are finished with shop coat of air dried primer, baked prime or baked enamel in plain color or grained to meet individual requirements. Before painting all materials are thoroughly cleaned of grease and foreign material. Each coating is baked and sanded, final coats of baked enamel being rubbed to an eggshell gloss. Plain colors and grained finishes are carefully matched with approved samples.



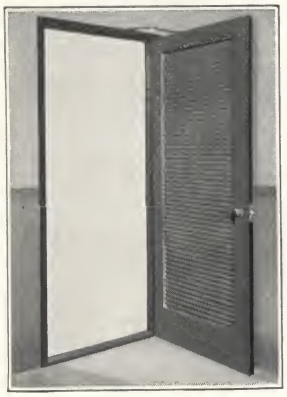
"Alstele" Gravity Slide Fire Door, Type No. 400

"Alstele" Fire Doors, Types Nos. 300, 400 and 500 (Patented)

Uses—"Alstele" Fire Doors, when used in fire walls, corridor and room partitions, stairhalls or exterior wall openings, offer the highest possible safeguard to life and property by preventing the spread of fire, smoke and heat.

They can efficiently protect all openings when built and installed in one of the following ways: Gravity or Level Track Sliding Doors, Lap or Rabbetted Type Swinging Doors or Slide-up Door.

When installed in a building these doors offer the maximum saving possible in insurance rates, thereby paying for themselves very rapidly.



"Alstele" Stair Door and Frame, Type No. 500

Construction—Door stiles and rails are constructed of 18 gauge galvanized steel pressed to tubular shapes with projecting members for fastening panels. Corners are acetylene welded and ground smooth. Panels are built up from two layers of cross-laid corrugated galvanized steel interlined throughout with asbestos sheeting and riveted to stiles and rails. This construction eliminates unsightly angles and cross braces and produces a rigid door of neat appearance.

Doors constructed in the above manner are given the highest rating of Underwriters' Laboratories of Chicago and Factory Mutual Laboratories of Boston and bear their labels.

Advantages—"Alstele" doors are absolutely fireproof, strong and rigid. They are comparatively light in weight and easy to operate. Since all parts of the door are constructed from galvanized steel they are not subject to dry rot or rusting even under the most adverse operating and climatic conditions. Maintenance costs are almost negligible due to the sturdy construction of doors and hardware. For best results specify "Firecraft Alstele" doors.

Metal Door and Window Accessories

In order to maintain metal doors and windows in first class condition, we offer a wide variety of accessories and hardware. From a single source of supply you may now obtain a complete line of accessories for hollow metal doors and windows, passenger and freight elevator doors and collapsing gates. We also manufacture parts and sets of Underwriters' Labeled Fire Door Hardware for use with all types of fire doors.

Write for our new catalog illustrating and describing these products.

E. H. FRIEDRICH COMPANY

Metal Covered Doors, Windows, Partitions and Trim; Steel Bucks, Tin Clad Fire Doors and Hardware

HOLYOKE, MASS.

REPRESENTATIVES

ALBANY, N. Y., Haefner & Harding
ATLANTA, GA., J. M. Van Harlingen
BALTIMORE, MD., Consolidated Supply Co.
BOSTON, MASS., Rubin Burke Co.
DETROIT, MICH., Detroit Fire Door Co.
ERIE, PA., Erie Sales Co.
HARTFORD, CONN., Scherer Steel Co.
MILWAUKEE, WIS., Jos. C. Millman
NEW HAVEN, CONN., A. R. Kirschner Co.
PHILADELPHIA, PA., M. O. Sundelius
PITTSBURGH, PA., Edward A. Haupt
WASHINGTON, D. C., Zimmer Sales Co.

Products

HIGH GRADE METAL COVERED WOOD DOORS, FRAMES and TRIM, METAL COVERED DOUBLE HUNG WINDOWS, PARTITIONS, ENTRANCES, etc., furnished in Kalamein Iron, Steel, Copper and Bronze.

Kalamein and Tin Clad Fire Doors, furnished with Underwriters' label when required.

FIREPROOF HOLLOW METAL WINDOWS with Underwriters' label.

TRADE-MARK

Facilities and Workmanship

Our factory is especially well equipped to produce any design in metal covered work, such as is used for bank entrances, office buildings and schools.

This work is done by craftsmen well skilled in their trade who are capable of producing finished material to suit any architectural conditions relative to design and exacting workmanship.

FRIEDRICH CONSTRUCTION SPECIFICATIONS

Metal Covered Work

Wood Cores—The cores of all metal covered work are made up from clear kiln-dried white pine, free from large or loose knots, sap and dry rot.

All cores are milled true to form through moulding machines.

When stiles and rails are more than 6 ins. wide, they are made of strips glued together with waterproof glue.

Metal Covering—All woodwork is covered by drawing through steel dies.

Panels are of composition, wood or asbestos and are covered by gluing metal to surface under pressure.

Metal covering may be kalamein iron, furniture steel, copper or bronze.

Kalamein iron or furniture steel can be furnished in gauges from 28 to 20; copper from 14 to 48 oz., and bronze from 24 to 16 gauge.

Unless otherwise specified, standard manufacture is based on 26-gauge kalamein iron; 24-gauge furniture steel; 16-oz. copper and 20-gauge bronze.

Assembly—All doors are assembled with mortise and tenon joints glued together and nailed.

All joints between metal are soldered flush and scraped smooth, making an even surface throughout.

Joints in bronze doors are made by locking the metal and sweating to a plate fastened on the wood core, making a hair-line joint when finished.

Muntin bars are completely covered with metal, and all coped to fit contour of moulding and joints soldered and scraped smooth.

Finish—Copper cleaned and oiled, or oxidized when specified. Bronze cleaned and oiled or finished statuary.

All kalamein material is furnished with a prime coat of paint.

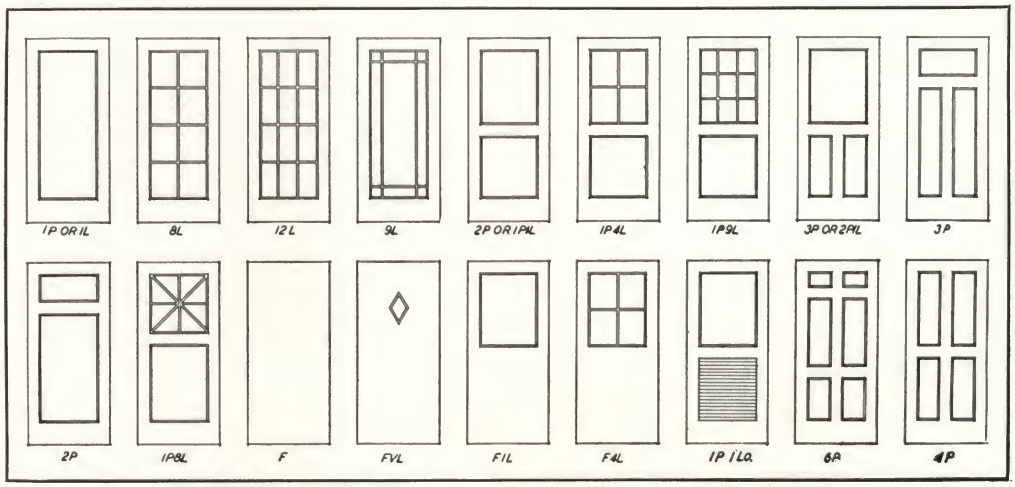
Hollow Metal Windows

A complete line of all types of hollow metal windows, Underwriters' labeled, is manufactured by this company.

This includes double hung, stationary, pivoted and combinations of these types.

All windows are made with cutting and forming dies which insure the fitting of every member when assembled and a perfect operating window. Made in standard 24-gauge, also heavy type 20-gauge.

Specifications and details sent on request.



Representative Door Types

Combination Steel Bucks

Made of 16 and 14-gauge steel with integral moulded or flat trim. Miters have full continuous weld. Bucks are reinforced, drilled and tapped for all mortise hardware and reinforced only for surface hardware. Bucks can be made of 12-gauge steel with flat trim.

A FEW RECENT INSTALLATIONS

BUILDING	ARCHITECTS
Timothy Dwight College, Yale University, New Haven, Conn.	James Gamble Rogers
Williston Library, Mt. Holyoke College, South Hadley, Mass.	Allen, Collens & Willis
Park Avenue School, West Springfield, Mass.	McClintock & Craig
Technical High School, Springfield, Mass.	Gardner & King
Vocational School, Somerville, Mass.	John P. Heffernan
Logan School, Washington, D. C.	Municipal Architect

BUILDING	ARCHITECTS
Refectory, Holy Cross College, Worcester, Mass.	Maginnis & Walsh
Kitchen, Dining and Bakery Building, Palmer, Mass.	Richard Shaw
Dormitory, Phillips Exeter Academy, Exeter, N. H.	Cram & Ferguson
Erecting Shop, Draper Corp., Hopedale, Mass.	F. P. Shelton & Son
Morrow Hall, Amherst College, Amherst, Mass.	McKim, Mead & White

JAMESTOWN METAL CORPORATION

FORMERLY JAMESTOWN METAL DESK COMPANY

Elevator Enclosures—Metal Doors and Jambs—Partitions and Interior Trim—Steel Office Furniture—Filing Equipment

EXECUTIVE OFFICES AND FACTORY

JAMESTOWN, NEW YORK

SALES OFFICES

ATLANTA, GA., Harry E. Lindley, 201 Red Rock Bldg.
BOSTON, MASS., E. A. Richards, 34 Summit St.
CLEVELAND, OHIO, Joseph W. Loeb, 509 Empire Bldg.
CHARLOTTE, N. C., A. L. Simpson, P. O. Box 1672
DALLAS, TEX., Richard H. Cain, P. O. Box 4034
DES MOINES, IOWA, Hansen Metalkraft Co., 3905 Amick Ave.
DETROIT, MICH., Robbie Robinson Co., 3504 Courville Ave.
NEW HAVEN, CONN., A. R. Kirschner Co., 30 Whitney Ave.
NEW YORK, N. Y., Jamestown Metal Desk Corp., 285 Madison Ave.
PHILADELPHIA, PA., Robert R. Mackay, 2206 Chestnut St.
PITTSBURGH, PA., Ernest W. Lauschke, 207 Fulton Bldg.
RICHMOND, VA., Henry W. O'Grady, P. O. Box 933
SAN FRANCISCO, CAL., The Associated Engineers and Construction Commodities Corp., 917 Shreve Bldg.
SCRANTON, PA., Lebar & Evans, 711 Linden St.
WASHINGTON, D. C., Lally-Rholader Co., 1756 M St., N. W.

REPRESENTATIVES IN MOST PRINCIPAL CITIES

Hollow Metal Doors and Jambs

A special engineering section is maintained to analyze building requirements and prepare the necessary drawings to meet the architect's most exacting ideas.

Elevator Enclosures

A fireproof labeled elevator landing unit installation will obtain certain insurance credits that will greatly offset the slightly higher original construction cost. Investigate the advantage of hollow metal from an insurance standpoint very carefully.

Partitions and Interior Trim

When hollow metal construction is used, the units can be taken down and rearranged to suit individual tenant requirements. There is no waste and little depreciation.

Steel Office Furniture

This company is one of the pioneers in the manufacture of steel office furniture of the better quality. Desks with drawers that always slide easily, panels properly soundproofed, large selection of models.

Filing Equipment

This department is a natural development of the desk business. Our various lines of Filing Equipment have all the fine features of our desks plus many added developments.

KALMAN STEEL CORPORATION

SUBSIDIARY OF BETHLEHEM STEEL CORPORATION

Manufacturers of Steel Door Frames

GENERAL OFFICES

BETHLEHEM, PA.

For Other Offices, see our page on Concrete Reinforcement

Products

STEEL BUCK; STEEL JAMB; KALMANTRIM.
KALMAN EXTRUDED-METAL BLACKBOARD FRAMES.
Also other related products.
For Kalman Concrete Reinforcement, and Steel Joists, see File Index.

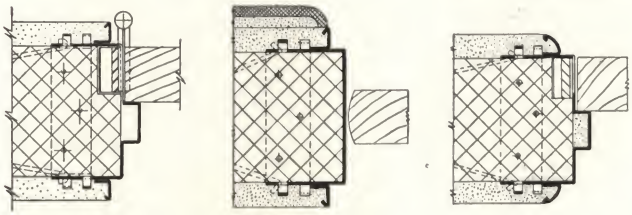
Kalman Steel Door Frames

Kalman Steel Door Frames are made of 16-gauge steel, painted with one shop coat of metallic primer. Corner joints are coped and arc-welded. Plaster terminals are galvanized. Frames may be used in tile, masonry and concrete walls. Sides of frames closely engage rough wall. Looped flanged and galvanized plaster beads provide an excellent bond for plaster.

Kalman Frames are designed to eliminate standing trim. The wall plaster itself is used effectively and naturally as the covering medium. Wall space is thereby increased, and complete harmony with modern window openings obtained. There are no casings to mar or split—no ornate effects to grow shabby and out-of-date. Kalman Frames contribute simple, pleasing lines and clean-cut appearance.

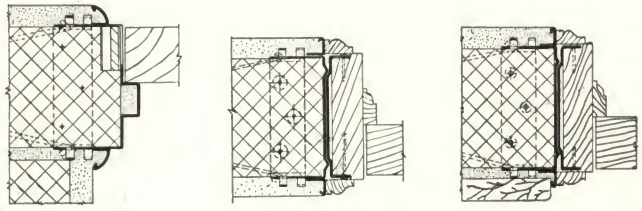
The above picture illustrates how effectively Kalman Steel Door Frames eliminate the standing trim from the doorways, make this interior thoroughly modern.

Several details of typical steel jamb and steel buck arrangements are illustrated below.



Kalman Steel Jambs

Kalman Steel Jambs replace rough wood buck, plaster grounds, finished jamb and standing trim—all in one piece. They are supplied with necessary cut-outs and reinforcements, properly drilled and tapped for attachment of hardware.



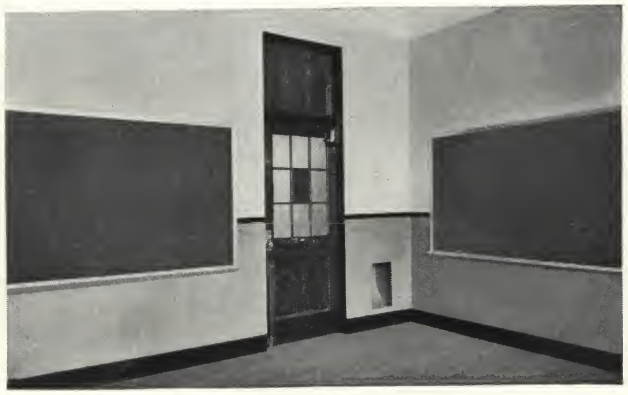
Kalman Steel Bucks

Kalman Steel Bucks replace rough wood buck, plaster grounds, and standing trim. They are designed to arrest passage of light and are furnished with attachments to receive finished wood jamb lining and small closure moulding.

Kalman Extruded-Metal Blackboard Frames

Kalman Extruded-Metal Blackboard Framing consists of chalk-tray and side and top mouldings of extruded metal, continuous-steel grounds and necessary clips. The special top moulding, flanged to receive sliding clips for holding papers, maps, etc., is also available. Corkboard frames utilize moulding on all four sides. The entire assembly is simple to install.

Bright, attractive, practically everlasting, these metal frames have a logical place in the modern school building. When used in conjunction with Kalman Steel Door Frames, as illustrated, a completely harmonious interior is obtained. Write for booklet on this new and interesting development.



THE R. C. MAHON COMPANY

Manufacturers of Kalamein and Tin Clad Doors

DETROIT, MICH.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

MAHON KALAMEIN and TIN CLAD DOORS; TRANSOMS, JAMBS, TRIM and MOULDING SECTIONS.

For Mahon Acoustical Ceilings, Steel Roof Deck, Rolling Steel Doors, and Cast Iron Roof Sumps, see File Index.

Mahon Kalamein Doors

Underwriters' Labeled Doors—Mahon Underwriters' Labeled Kalamein Doors are manufactured from the finest selected kiln-dried pine, covered with 24-gauge sheet steel. All joints are welded, making a sturdy, fire safe, fine appearing door.

Standard Kalamein Doors—Mahon Standard Kalamein Doors embody the same high quality materials and fine workmanship as Mahon Underwriters' Labeled Doors. These doors are manufactured for use in locations where quality fire doors are desirable when labeled doors are not specified.

Type 1 Kalamein Door

Standard Types and Sizes—Mahon Underwriters' Labeled and Standard Kalamein Doors are available in 12 distinctive designs in 16 standard sizes. These doors, with their sharp, clearly defined lines, are masterpieces of fine workmanship—fit companions for the finest materials that can go into any building.

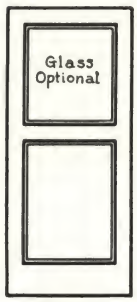
Service—Mahon designers are available and will co-operate on special conditions where standard size doors cannot be used.

Mahon Tin Clad Doors

THE R. C. MAHON COMPANY also manufactures tin clad doors (Underwriters' labeled) to meet every requirement.

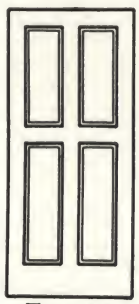
STANDARD SIZES—MAHON KALAMEIN DOORS

2'6"x6' 6"	2'8"x6' 6"	2'10"x6' 6"	3'0"x6' 6"
2'6"x6' 8"	2'8"x6' 8"	2'10"x6' 8"	3'0"x6' 8"
2'6"x6'10"	2'8"x6'10"	2'10"x6'10"	3'0"x6'10"
2'6"x7' 0"	2'8"x7' 0"	2'10"x7' 0"	3'0"x7' 0"

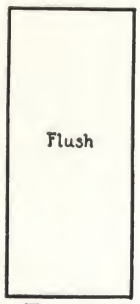


Type 1

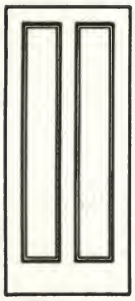
Type 2



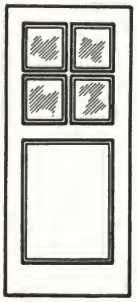
Type 11



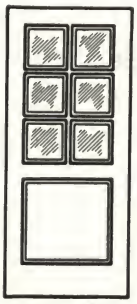
Type 12



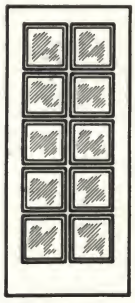
Type 3



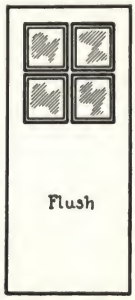
Type 4G



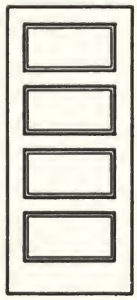
Type 5G



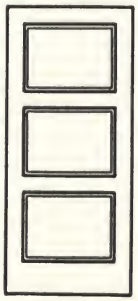
Type 6G



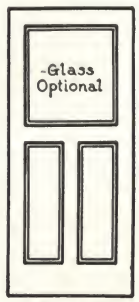
Type 7G



Type 8



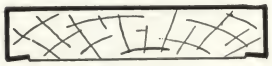
Type 9



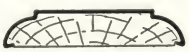
Type 10

Standard Fireproofed Jambs, Trim and Moulding

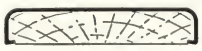
Transoms, jambs and many attractively designed trim and moulding sections, manufactured from the same high quality materials and fireproofed in the same manner as Mahon Kalamein Doors, are carried in stock for immediate delivery.



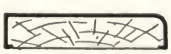
No. 101
Standard 5½-in. Jamb



No. 200



No. 201



No. 203

Nos. 204 and 206

No. 205

Standard Trim Sections

No. 100

No. 101

No. 102

Standard Stop Sections

No. 300

No. 301

No. 305

No. 307

Nos. 309 and 308

No. 310

No. 311

Standard Moulding Sections

THE MOESCHL-EDWARDS CORRUGATING CO., INC.

Manufacturers of Kalamein and Tin Clad Doors
CINCINNATI, OHIO

Products

"Mecco" Kalamein and Tin Clad Doors; Jambs, Trim, Transoms and Moulding Sections.

For "Mecco" Rolling Steel Doors, see File Index.

TRADE-MARK

Facilities

A long established firm with a modern plant and ample facilities to execute orders of any size, for high grade metal covered woodwork in steel, copper or bronze. Also hollow metal frames, kalamein trim and moulding.

Labeled Products

Kalamein doors are Underwriters' labeled for all except Class "A" openings. Frames to be labeled must be hollow metal. Mecco labeled doors and frames will give you the best possible rating obtainable. A circular giving complete details will be mailed upon request.

Specifications for Underwriters' Labeled Kalamein Doors

Where specified or marked "Kalamein Doors" same shall be metal covered with wood cores and labeled by the National Board of Underwriters and all to be as manufactured by The Moeschl-Edwards Corrugating Co., Inc., of Cincinnati, Ohio.

The cores shall be built of non-resinous wood assembled with mortise and tenon joints. Panels to be ¼-in. thick formed of asbestos mill board and two thicknesses of 24 gauge galvanized steel. Covering for rails and stiles shall be not less than 24 gauge galvanized steel so applied as to fit the cores snugly and edges of covering to be riveted through the panels, all in neat and workmanlike manner.

Where stiles and rails meet, they shall be joined by a lock joint. Panel moulds are to be hollow metal or of wood core, drawn metal construction with members sharp and true. Glass moulds to be of drawn hollow metal, joined as approved by the Underwriters. Doors shall receive one prime coat of paint at the factory.

STOCK DOORS—STANDARD SIZES ALWAYS IN STOCK
All Dimensions in Feet and Inches

Type M	Type 2M	Type 2G
2–6x6–0; 2–6x6–6 2–8x6–8; 3–0x7–0	..... 2–8x6–8; 3–0x7–0	..... 2–8x6–8; 3–0x7–0

Construction and Materials

"Mecco" Kalamein products are manufactured of only high grade materials throughout. Construction used is that proven by time and experience to be the best for every condition. Wood work is kiln dried and only stretcher leveled sheets of proper gauges are used.

Specifications for Commercial Non-labeled Kalamein Doors

Where specified or marked "Kalamein Doors" same shall be metal covered with wood cores, as manufactured by The Moeschl-Edwards Corrugating Co., Inc., of Cincinnati, Ohio.

Cores shall be of non-resinous wood with mortise and tenon joints, thoroughly glued and nailed.

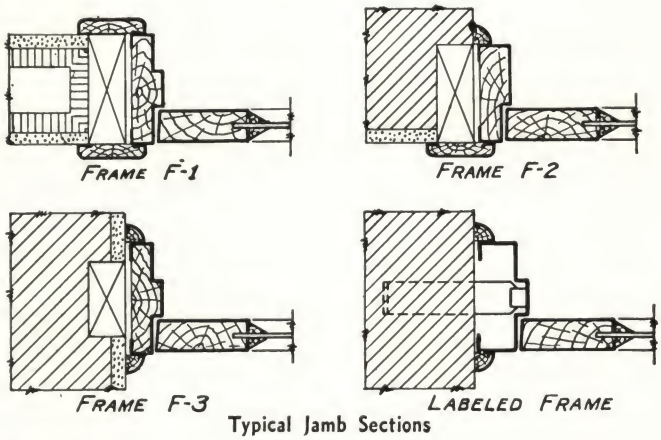
Covering shall not be less than No. 25 gauge stretcher leveled kalamein iron for interior doors and No. 24 gauge galvanized steel for exterior doors, so applied as to fit the cores snugly, in the most approved and workmanlike manner.

Panel and glass moulds may have wood cores with metal covering drawn tightly on by means of steel dies, or they may be hollow metal. All members must be sharp and true; no pressed moulds will be permitted.

Doors must receive one prime coat of paint at the factory.

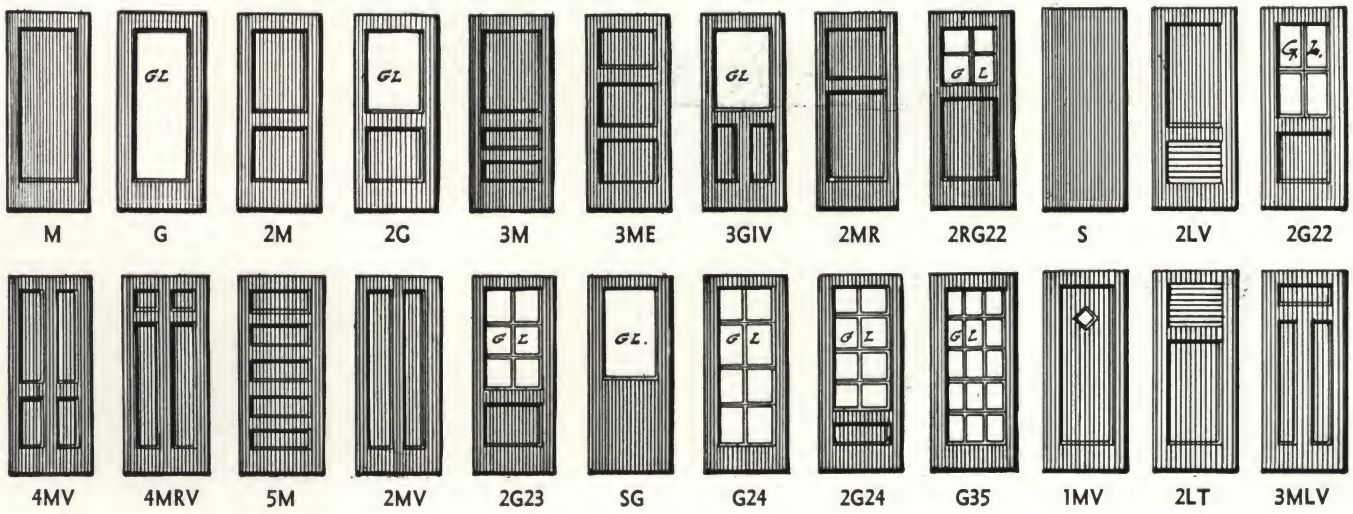
Frames, casing and staff moulds for these doors, where required, are also to be wood core, metal covered of equal workmanship.

Hardware is furnished by others, but must be mortised for by the door manufacturer at the factory.



Typical Jamb Sections

Suggestions for Paneling



OVERLY MANUFACTURING COMPANY

SUCCESSORS TO W. F. OVERLY AND SONS

ESTABLISHED 1888

Architectural Sheet Metal Products

GREENSBURG, PA.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Kalamein Doors, Frames and Trim Products

KALAMEIN DOORS, FRAMES and TRIM
TIN CLAD DOORS
FORMED METAL DOOR FRAMES
KALAMEIN DUMBWAITER UNITS
KALAMEIN SMOKE SCREENS

Facilities

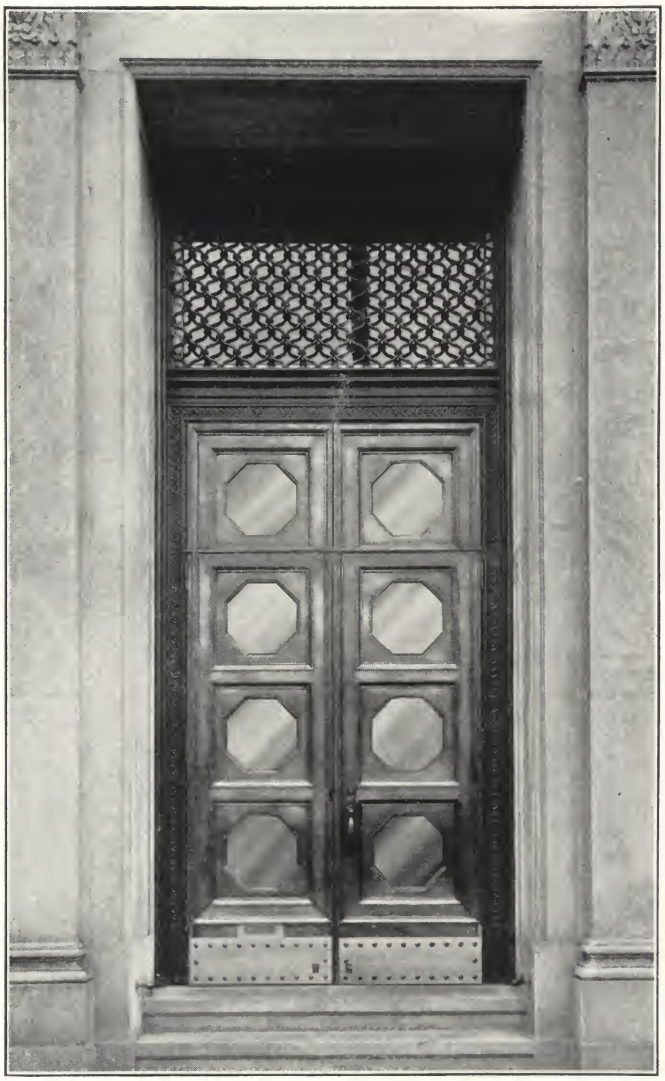
The Overly plant is modernly equipped to produce a fine quality product at moderate cost—for a single door, or on a production basis.

Overly Kalamein Doors

Overly Kalamein Doors are made in all types and sizes (including special design) for entrances, in bronze, aluminum, copper, and alloy steels.

The Standard Overly Door has a wood core of thoroughly seasoned, kiln-dried white pine, straight, true and free from loose or unsound knots, shakes or other imperfections. The metal is die-formed to insure uniformity, and made to completely encase each member of the door. The method of assembling assures the metal adhering closely to the wood core without waves, buckles, mars or imperfections.

Overly Kalamein Doors can be furnished in conformity with architects' specifications which are not standard, and with Underwriters' labels when specified.



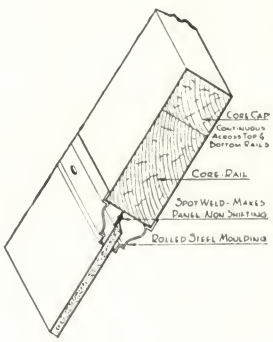
Sheet Metal Products

STAGE VENTILATORS
SKYLIGHTS and CORNICES
ROOF VENTILATORS
GUTTERS, CONDUCTORS
MARQUEES

Service

Estimates will be furnished from the architects' plans and specifications. Suggestions and shop drawings will be furnished whenever desired. We co-operate with architects, engineers, contractors or owners and offer our engineering service without obligation.

All Overly products are made with the same painstaking craftsmanship that identifies the Overly Door. Where Sheet Metal products are required, you are invited to use the consulting service of the Overly technical staff.



TRUSSBILT, INC.

Manufacturers of Hollow Metal Doors and Trim

2575 Como Avenue, West
ST. PAUL, MINN.

3303 Como Avenue, Southeast
MINNEAPOLIS, MINN.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

TRUSSBILT STEEL FLUSH DOORS.
HOLLOW METAL PANEL DOORS.
ELEVATOR DOORS and FRAMES.
HOLLOW METAL BUCKS, FRAMES and TRIM.

Experience and Service

Trussbilt products represent the latest and best in Hollow Metal construction as developed during our many years of designing and fabricating experience. Our enviable reputation for responsibility, integrity and high quality of materials and workmanship is your guarantee of satisfaction when specifying Trussbilt Products.

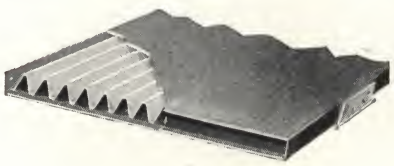
Trussbilt facilities and service make possible a satisfactory installation of high grade Hollow Metal.

Flush Doors

The steel flush door construction, as developed by Trussbilt engineers, is an outstanding improvement in the history of Hollow Metal Industry and Trussbilt flush doors give the designer a smooth and unbroken surface for creative design and decoration, which makes Trussbilt flush doors particularly attractive when used in hotels, apartment houses, hospitals, office buildings and schools.

Construction

Trussbilt flush doors consist of an outer shell of 18-gauge steel which is reinforced with a truss-formed inner-core of 28-gauge steel, which core is spot welded to the outer shell at not more than 3 ins. on centers, both vertically and horizontally over the entire surface on both sides.



Trussbilt Flush Steel Door Unit

The edges of doors are finished flush and the top and bottom of doors have a 16-gauge channel reinforcement welded in place.

All necessary mortises and reinforcements for hardware are provided, and all Trussbilt flush doors are properly sound insulated.

Underwriters' Labels

Trussbilt flush doors, paneled doors, bucks, and frames can be furnished with Underwriters' labels where so required or specified.

Specifications

Flush Doors—All flush doors where shown on plans or schedule shall be Trussbilt flush doors as manufactured by TRUSSBILT, INC., of St. Paul, Minn.

Doors requiring glass panels shall have openings equipped with removable mouldings.

Hardware is to be furnished by others and all mortised hardware will be delivered prepaid to the door manufacturer for application without additional cost, the surface applied hardware, such as checks, holders, etc., to be applied at the building by the erector.

Finish

Before doors are painted they shall be thoroughly cleaned, completely immersed in a rust-inhibiting primer and baked, so the interior as well as the exterior is completely covered; follow with three coats for plain color work and five coats for grained finishes, all to be baked on. Final coat to be rubbed to an eggshell gloss.

ESTABLISHED 1909

BABCOCK-DAVIS CORPORATION

Iron, Steel, Mechanical and Electrical Specialists

474 Dorchester Avenue

BOSTON, MASS.

For Babcock-Davis Steel Flagpoles, see File Index

Products and Services

Specialists in Motor Operating Doors, Windows, Lightproof Curtains, Walls, Blackboards, Ceilings, Floors, Roofs, Stages, Curtains, Platforms, Gates, Drawbridges, Bleachers, and any other movable parts or structures.

Aluminum Self-contained Roof Hatch Covers.

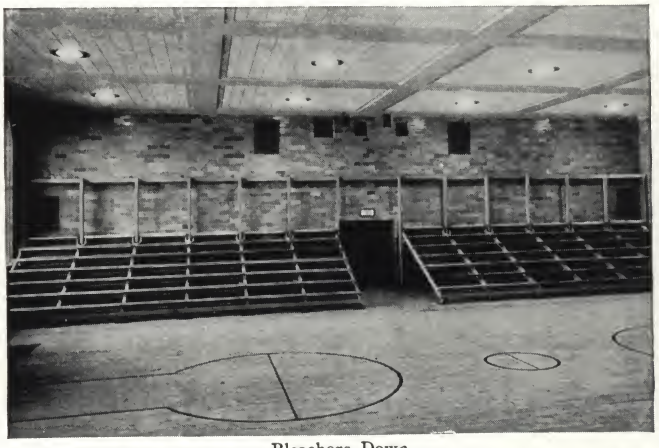
Our Engineering Department is always ready to furnish layouts, preliminary estimates and specifications where any of our equipment is to be used.

It is imperative that we be advised of a project in its early stages so that the proper clearance, framing and surrounding Architectural Details may be studied and designed before construction is started to insure complete and satisfactory installations.

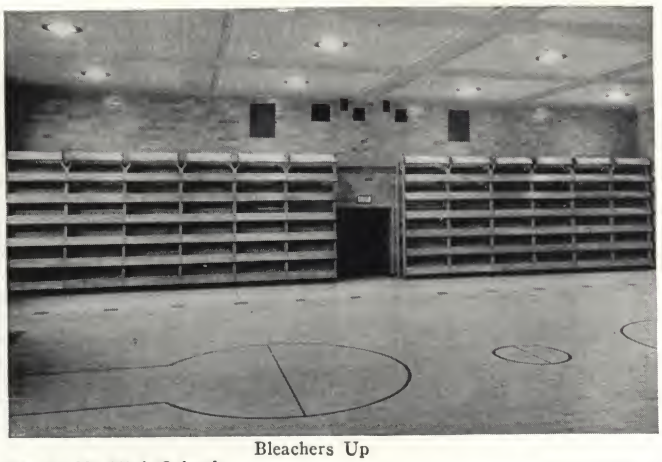
MOTOR OPERATED BLEACHERS

Motor Operated Bleachers have become very popular in gymnasiums of schools and colleges, as the bleachers can be pulled back against the wall giving considerable more gym floor space for practicing. The bleachers can be made in any size to fit the special building conditions and seating requirements of owner.

The accompanying illustrations show how experience has developed this material to fit into very small spaces.



Bleachers Down



Bleachers Up

Bleachers at Washingtonville, N. Y., High School

Galen H. Nichols, Architect

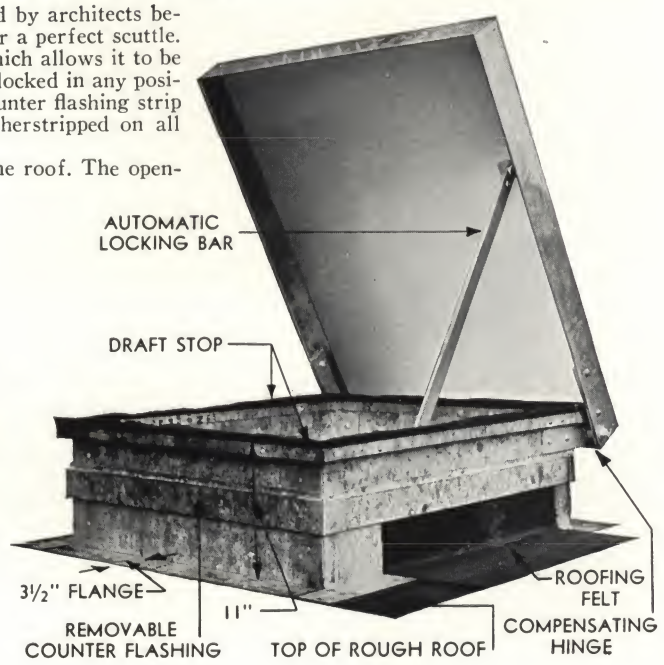
B-D EASY ACCESS ROOF HATCHWAY

B-D Easy Access Roof Hatchway Covers and Curbs are specified by architects because they know that it is the cover that answers all requirements for a perfect scuttle. Cover is of aluminum and swings on special compensating hinges which allows it to be raised with practically no exertion on the part of users and it can be locked in any position. Hatch curb is made of Galvanized Armco iron. Sides have a counter flashing strip ready to take either copper or roofing paper, and covers are weatherstripped on all four edges.

Installation of the curb is accomplished by nailing or bolting to the roof. The opening in the roof is 2 ft. 6 in. x 3 ft.

Specifications

Furnish and install Standard B-D Easy Access Roof Hatchway on roof opening 2 ft. 6 in. x 3 ft. Cover to be operated on special compensating type of hinges and locking bar as manufactured by Babcock-Davis Corporation, 474 Dorchester Avenue, Boston, Mass.



BABCOCK-DAVIS MONO-WHEEL DRIVES

MONO-WHEEL DRIVES FOR AIRPLANE HANGAR DOORS

Patent 1960860

Mono-Wheel Drives have met the demand for operating sliding doors for airplane hangar doors, bus garage, shipping areas, gates, roofs and any object to be moved.

Mono-Wheel Units As Applied to Airplane Hangar Doors

For large openings, such as hangar doors we have a patented system of banding which makes all the doors operate in unison. This eliminates overstressing panels by jarring as one panel picks up the next as is the usual method.

The heating problem is overcome by motorizing the doors, because they can be opened and closed in a short period of time by the touch of a finger.

The Mono-Wheel Units can be installed on existing doors in a very short time without interfering with usual traffic.

If the hoisting cables of Lift Style Doors, which are exposed to the weather and vandalism, are broken, the doors remain closed and inoperative.

Mono-Wheel Drive type of doors are always operative by hand if necessary.

Opening Controlled by 2 Mono-Wheel Units at Spokane, Wash. Opening 158 ft. 2 in. Wide by 25 ft. High

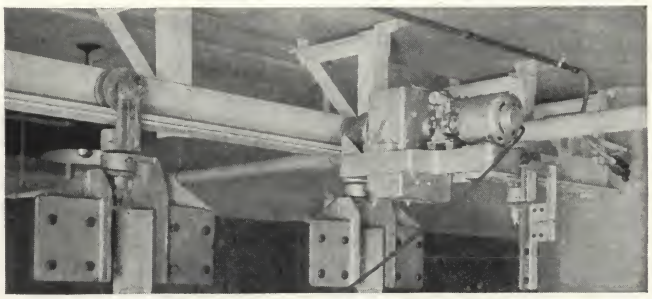
MONO-WHEEL UNITS

Mono-Wheel Units for train drive type of doors can be adapted for one or more panels depending on the size of the opening.

This type of operation eliminates expensive overhead structural framing and can be installed where there is a minimum amount of headroom. There are no operating cables or chains required and the doors can be partially opened or closed in a few moments from any control station.

These drives come in single or tandem styles and will operate doors of either straight line or round the corner types of doors.

Shipping areas protected by doors with Mono-Wheel Drives are being specified by far-sighted engineers and architects because working space behind these doors can be heated in extreme cold weather, thus facilitating quicker handling of materials and protecting the space against inclemency of the weather and undesirables.



Mono-Tandem Unit and Ball Bearing Swivel Hanger Hinges

Inside View Showing Door Opening Around Corner

Outside View Showing Door Closed

Shipping Doors Christian Science Publishing Society (5 openings), Boston, Mass.

CHESTER LINDSAY CHURCHILL, Architect — LOCKWOOD GREEN ENGINEERS, INC., Engineers

SOME RECENT INSTALLATIONS

Movable Roofs—Club Mayfair and Cocoanut Grove, Boston, Mass.

Light-Proof Curtains—Massachusetts Institute of Technology, Cambridge, Mass. (Stone & Webster, Engineers); Wellesley College, Wellesley, Mass.

Movable Blackboards—Massachusetts Institute of Technology, Cambridge, Mass. (Stone & Webster, Engineers); Wellesley College, Wellesley, Mass.

Bleachers—Washingtonville High School, N. Y. (Galen H. Nichols, Architect).

Mono-Wheel Units—Washington National Guard Hangar, Spokane, Wash.; Christian Science Publishing Society, Boston, Mass. (Chester Lindsay Churchill, Architect.; Lockwood Green Engineers Inc., Engineers).

Fire House Door Operator—4 Four-fold Door Operators, City of Cambridge, Mass. (Sturgis Associates, Architects).

Garage Doors—Cambridge Police Headquarters (Putnam & Cox, Architects); Bowdoin Square Garage, Boston, Mass.

THE STANLEY WORKS

ELECTRIC DOOR DIVISION

NEW BRITAIN, CONN.

NEW YORK REPRESENTATIVE: George Lowe, 100 Lafayette Street (Telephone: CAnal 6-0500)

For Stanley "Roll-up" Doors, See File Index

Railroad Station

Building Entrance

Chain Restaurant

Shop Entrance

STANLEY MAGIC DOORS

(Patented)

Open at Your Approach—Close Automatically

Doors of Any Size, Weight and Materials

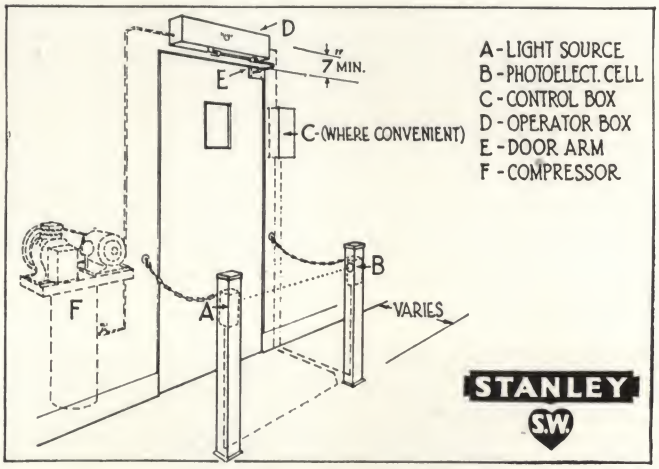
Stanley Magic Door equipment is available for the economical operation of heavy entrance doors, single or double types, in stores, office buildings, hotels, factories, hospitals, railway stations, clubs, garages, etc. They are thoroughly practical in application and dependable in operation.

With this equipment doors are made completely automatic. They operate when a ray of light, falling on a photoelectric cell, is interrupted—the door opens long enough for a person to pass through, then closes automatically. If the door is partly closed when the next person approaches, it immediately re-opens from any degree of closing. When a number of people pass through in quick succession, the door stays open until the last person passes through.

For Single or Two-part Doors of Any Size

Doors of any size, weight or material may be operated. Where maximum speed is desired, as in restaurants, two-leaf doors operated in one direction in pairs are generally recommended. Two-leaf doors may also be operated with one part opening *"out"* and the other *"in"* if desired. Doors already in place are easily equipped with Stanley Magic Door Operators without rehanging.

In addition to the photoelectric control mentioned above, push button, ceiling pull cord, and various other types of controls can be supplied to meet special conditions. Recommendations and prices will be submitted on receipt of working drawings or sketches of the door and all conditions surrounding the door, including electric current available.



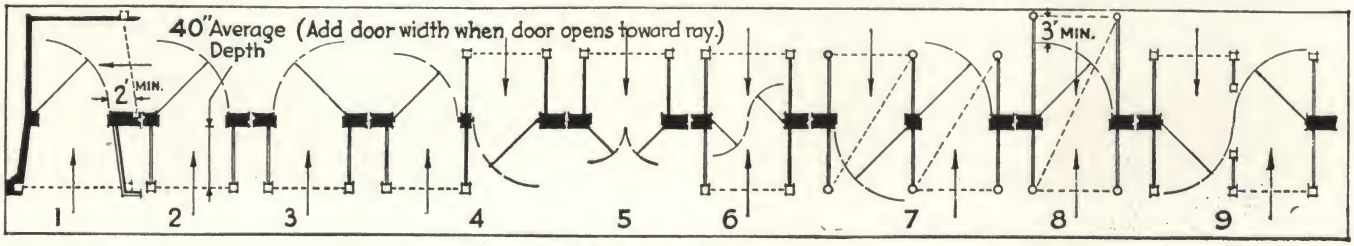
Operation of Stanley Magic Doors

The equipment consists of four parts—Operator, Control, Railings or Posts for housing the Photoelectric Control and Air Compressor. The operation is best explained by reference to the diagram above.

Light Source (A) in post projects a beam of light which falls upon photoelectric cell (B) in opposite post or railing. Interception of this beam causes cell to actuate photoelectric relay (C) which in turn causes air to be released through air valve controlled by a solenoid in pneumatic operator (D). Motion is transferred to door through bracket (E).

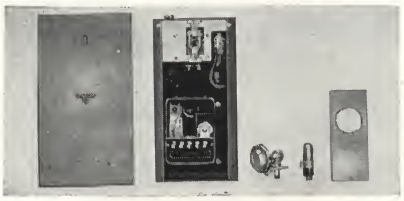
At the limit of the opening stroke, air valve permitting entrance of air is closed by a cam, and the door is then closed by springs contained in the operator. Automatic air compressor (F) supplies air at a constant pressure through pressure regulating valve.

In actual operation, the door opens quickly to approximately a wide open position, pauses at the full open position, after which it closes with a gentle checking motion. Operator is designed so that it may be adjusted for slow opening if preferred



A Few Typical Layouts

Equipment for Stanley Magic Doors



Control

Operator—The entire mechanism, completely assembled, is enclosed in a cadmium-plated steel case or other material, as desired.

Control—Includes photoelectric relay, steel relay box, switch, transformer for light source.

Also photoelectric cell and complete light source ready to fit into railings.

Railings or Posts—Available in a wide range of designs, metals and finishes.

Compressor—Complete with motor, air compressor with automatic switch, steel storage tank, air filter, pressure regulating valve and gauges.

Doors—Furnished by others.

Current—110 volts, 60-cycle, single-phase a-c. Rotary converter furnished where alternating current is not available.

Stanley also offers electric motor operators with various forms of control for Swinging, Sliding, Swing-up, and Roll-up Garage Doors and for the operation of Gates.

Operator

Consulting Service

Our engineers are always available to discuss the adaptability of Stanley Magic Doors to any specific problem, to recommend the most suitable type for the traffic to be handled and to furnish estimates or any pertinent information desired.

OTHER TYPES OF CONTROL AVAILABLE TO USE WITH STANLEY MAGIC DOOR OPERATORS

Diagonal Beam Control (Patent Applied For)

On doors constantly used by the public—some passing quickly and some slowly (in a wheel chair, on crutches, etc.), this auxiliary control is practically a necessity. This diagonal beam holds the door open as long as the beam is intercepted. A person starting through the aisle intercepts the cross light beam—the door opens. Almost immediately in continuing his passage he intercepts the diagonal light beam—holding the door open as long as it is intercepted. The second he steps out of the light beam door closes.

Hardware Control

Illustration shows a shop entrance, where photo-electric control is used on outside and hardware control on the inside. This is particularly desirable where space is limited. A person leaving the store grasps the handle which is connected electrically to the door operator. Contact with the handle opens an air valve in the operator, setting the door in motion. Speed of the door may be regulated, opening slowly to avoid danger to persons using it.

A practical use for Hardware Control is on heavy entrance doors which, due to weight or draft, would ordinarily require such heavy spring pressure to keep closed that it would be difficult to open manually.

Hardware Controls can be built into door handles, push bars, push plates, door knobs, or panic bolt bars.

Floor or Wall Switch Control

A practical installation of this kind has been made at the door to a lacquer room in an industrial plant—air conditioning necessitates keeping door closed. Previously, door was manually operated necessitating one free hand to open door, or foot type door holder to keep it open. In both cases efficiency of air conditioning was reduced. Most industrial plants have conditions similar to this.

On this particular job control is by means of a plate switch (may be located in either floor or wall), which allows the worker to approach the closed door with both hands full, step on the switch and door opens—then closes.

Pull Cord Control

Pull Cord Control is practical in industrial plants on passage doors between departments—especially where doors are used for truck passage. The truck operator, in approaching door, pulls cord switch located at any point convenient to route of traffic—door opens, truck passes through, and door closes after a pre-determined period, or it can be arranged to close by pulling cord switch on either side of the door.

Variations of Photoelectric Control

Illustrations on preceding page show the photoelectric control apparatus located in either posts, railings or walls—horizontally in front of doorways. In industrial plants, controls located in posts are inconvenient, as there is always the possibility of their being struck by trucks. An installation on doors leading from shipping room to loading platform has been made by us, which eliminates posts. A beam of light runs from an overhead point on the inside of the building to a floor box on the outside, diagonally through a window in the doors. An operator or truck approaching the doors, intercepts the path of light—doors open and remain open until operator has passed through—then they close.

Another suitable installation where posts are undesirable is running a beam of light in front of the doorway from overhead to a floor or wall outlet. A more suitable location for the outlet than on floor is a low point on wall where it will not be walked on, accumulating dirt. This type of installation is practical where the same people use the door repeatedly, routing their path through the beam of light, but for doors being used by the public the definite aisle approach is more practical.

Protective Rope Feature

Rope is attached from outer stile of door diagonally back to a post or wall; when door opens this rope drops in back of the door and entirely out of the way. A person approaching from the wrong direction sees this rope and realizes this door is not for his use and is shied over to the next door, which is marked—"Enter."

Hardware Control

Diagonal Beam Control

Protective Rope Feature

Pull Cord Control

Stanley Magic Doors Are Displayed at Architect's Samples Corporation, 101 Park Avenue, New York

MEMORANDA

PEELLE

FREIGHT ELEVATOR · DUMBWAITER · INDUSTRIAL ENTRANCE

DOORS

THE PEELLE COMPANY · BROOKLYN, N.Y.

PEELLE DOORS
AND PEELLE ENGINEERING & SALES POLICY

• TYPES OF DOORS

THE PEELLE COMPANY manufactures doors for three classes of openings--freight elevators, dumbwaiters and industrial or commercial building entrances. All Peelle Doors are made to order to fit the size of the openings and space requirements of each job.

All Peelle Doors can be executed in any architectural design and in any of the commercial metals or alloys, in hollow metal, or in sheet metal over wood.

FREIGHT ELEVATOR DOORS

Consist of two vertically sliding leaves, one balancing the other. They are installed on the shaft side of the opening. They serve to protect the openings of fire-proof freight elevator shafts and are ruggedly built to withstand the constant heavy trucking of freight elevator traffic. Peelle Freight Elevator Doors may be either motorized or arranged for manual operation.

PEELLE ENTRANCE DOORS

Are made in three types—Horizontal Slide Type, Telco Sliding Type and Bi-Fold Type—for openings in garages, and at platforms or vehicle entrances in commercial or industrial buildings. They are not made in standard stock sizes but are made to order only. Large size doors are provided with remote control and motorized operation.

PEELLE DUMBWAITER DOORS

Are of the counterbalanced type, mounted in steel guides with a combination pressed metal frame and trim. The upper leaf slides up while the lower leaf slides down. The entire unit is assembled at the factory, ready for building into the masonry wall while the shaft is being built. The standard door is furnished with a flush panel design, but special designs may be made as desired.

• PEELLE ENGINEERING SERVICE

Peelle Engineering Service will gladly study any door problems, and make recommendations as to the proper doors for the service. Competent engineering service may be secured, without obligation, from any Peelle District Offices listed on the back cover of this catalog.

• PEELLE SALES POLICY

THE PEELLE COMPANY'S interest in any door installation does not end when the installation is completed. They are always interested in perfect operation and complete satisfaction to the users.

• PEELLE SERVICE TO THE OWNER

The Peelle Doors are a part of your mechanical plant equipment, and, like all heavy duty equipment, proper servicing is essential. We recommend that they be inspected regularly by an experienced Peelle service man, as he is thoroughly familiar with Peelle door maintenance. Consult the nearest Peelle District Office.

In case of replacement of any parts of a Peelle Door, use only genuine Peelle parts, which are always carried in stock.

• PEELLE GUARANTEE

All Peelle Doors are installed with a two-year guarantee. Defective parts, or workmanship, will be replaced by THE PEELLE COMPANY.

THE PEELLE COMPANY • 47 STEWART AVE.
BROOKLYN, N. Y.

A MEMBER OF THE PRODUCERS' COUNCIL, INC.

• Telephone: STagg 2-0366

For District Offices, See Back Cover

Copyrighted, 1935

TYPES OF PEELLE FREIGHT ELEVATOR DOORS

REGULAR TYPE (PATENTED)

See Pages 6 and 7

Regular Type Doors are used wherever spandrel heights above and below the openings in the shaft are of sufficient height to provide unobstructed space for the doors to open fully. The minimum spandrel height must be equal to one-half the opening height plus 6 ins.

These doors operate in one vertical plane.

The guides are continuous. The upper leaf of one door operates in the same guide as the lower leaf of the door above, and vice versa. Only one door in a series is open at a time.

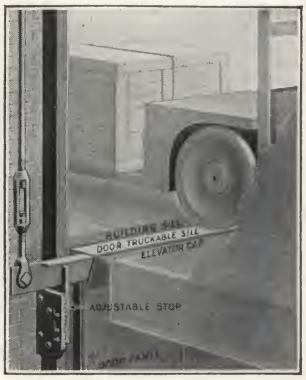
Regular Type

PASS TYPE (PATENTED)

See Pages 8 and 9

Pass Type Doors may be used where spandrel heights above and below openings are insufficient to take each door leaf when opened, without encroaching on the openings above and below. The minimum spandrel height required is 10 ins.

The two leaves of each door operate in separate vertical planes, each leaf having separate guides. This construction permits the lower leaf of one door to pass in front of the upper leaf of the door below, while the upper leaf passes behind the lower leaf of the door above. The space between the upper leaf of each pass type door and the shaft wall at the lintel is closed with a hinged movable lintel.



Pass Type

SELF-SEALING TYPE (PATENTED)

See Pages 10 and 11

Seals against sound, smoke, odors, dust, and draughts.

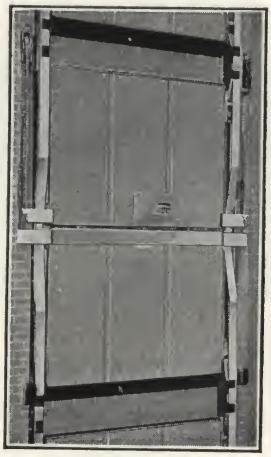
Self-Sealing Doors may be used for any shaft opening where the spandrel height is at least 18 ins.

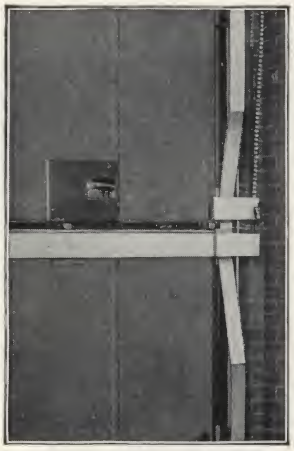
Both leaves of Self-Sealing Doors when closed make actual contact with the frame of the shaft opening at both sides, top, and bottom.

Self-Sealing Doors effectually seal the shaft openings against draughts, sounds, odors, dust, and smoke.

When opening, the leaves have an offsetting motion so that, when the spandrel height is less than half the opening height plus 6 ins., the doors will overlap the shaft doors above and below on the shaft side.

Self-Sealing Doors are recommended for use on service elevators in office buildings, hotels, department stores, and hospitals, as well as for general freight elevator use.





Self-Sealing Type

ELEVATOR CAR GATES

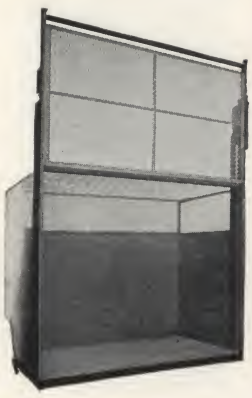
Vertical Sliding Counterweighted Units

Peelle Elevator Car Gates are made in a single vertically sliding unit and are counterbalanced with weights. The necessary guides are erected on the car platform and these must be the height of the shaft opening plus the height of the gate. Car gates are usually 6 ft. high unless otherwise required by safety codes.

Peelle Car Gates are constructed of 11-gauge wire mesh, set into steel angle frames with vertical and horizontal reinforcements.

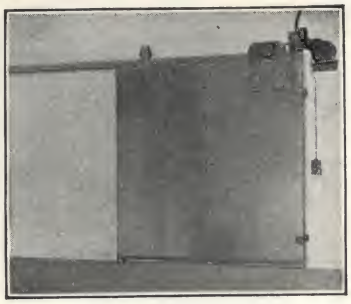
Peelle Car Gates are usually motorized in all cases. When used in conjunction with motorized doors, the gates open and close simultaneously with the doors, and are controlled from the same push buttons.

Car gates, when used in conjunction with manually operated doors, should be motorized so that the elevator operator will not lose the time required to operate the car gates.



Peelle Elevator Car Gates

TYPES OF PEELLE ENTRANCE DOORS



Horizontal Slide Type

MADE ONLY TO SPECIAL ORDER

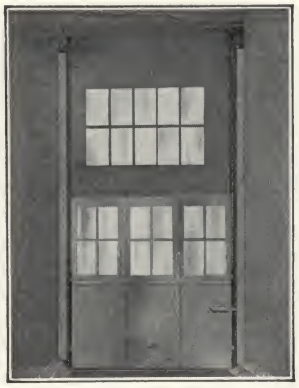
The types of doors illustrated below are not stocked doors, but are designed and made to fit each special condition. They are made in any material desired.

HORIZONTAL SLIDING TYPE

This is the simplest type of entrance door, where the space conditions permit its use. The minimum clear height required over the opening is 13 in., and the horizontal dimension on one side must equal the opening, plus 6 in., and 6 in. is required on the opposite side.

There are practically no limitations to the design of these doors or the materials from which the doors are made.

The most practical and economical construction for these doors is wood.



Telco Slide Type

TELCO SLIDING TYPE

Peelle Telco Doors are made in two leaves counterbalanced by weights. They slide up at a ratio of 2 to 1. This type of door is recommended wherever there is sufficient space overhead and at the jambs to permit its installation.

The overhead clearance required for the installation of this door is one half the opening height plus 19 in. The minimum jamb clearances are 4 in. on one side, and 12 in. on the opposite side, for doors under 15 ft. 0 in. wide. For doors exceeding 15 ft. 0 in. in either width or height, refer to THE PEELLE COMPANY for space requirements.

These doors are usually motorized, but may be made for manual operation.

Bi-Fold Type

BI-FOLD TYPE

Bi-Fold Doors consist of two leaves horizontally hinged to each other, the upper leaf being also hinged to the head of the opening. The leaves fold together as they swing up while opening.

These doors are recommended wherever space limitations prevent the use of either a Horizontal Slide or a Telco Slide Door.

These doors may be motorized, or manually operated.

PEELLE DUMBWAITER DOORS

See Pages 14 and 15

Peelle Dumbwaiter Doors

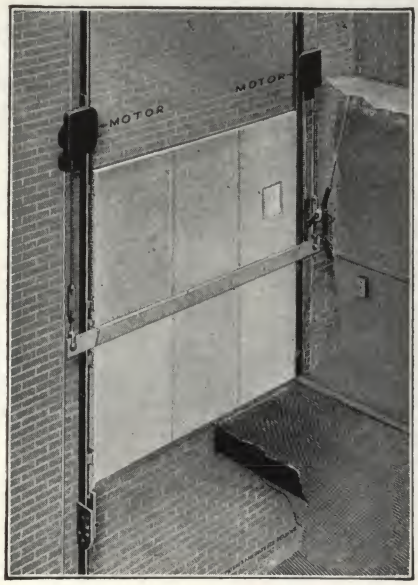
The Peelle Dumbwaiter Door unit is a counterbalanced door mounted in steel guides with a combination pressed metal frame and rim. The entire unit is assembled in the factory, ready for building into the masonry wall while the shaft is being built.

The door operates on the inside of the shaft, and takes up no floor space in opening or closing. It may be adapted to any floor plan without confliction. Each door has a 6-in. observation light so that the dumbwaiter is visible with the door closed.

The doors are insulated to eliminate noise. The standard door is furnished with a flush panel design, and bears the label of the Underwriters' Laboratories, Inc.

Standard specifications and construction details for all of the above gates and doors may be obtained from any district office or the home office.

PEELLE MOTORIZED FREIGHT ELEVATOR DOORS



Shaft Side View of Peelle Motorized Door

DESCRIPTION OF OPERATION

A pair of motorized sheaves exert the power for opening and closing each door. The power is applied directly to the chains which connect the two halves of the door. All rods, arms, and auxiliary devices are eliminated. There are no unnecessary moving parts, therefore all of the power consumed is applied to door.

The Peelle Motorized Door eliminates dividing the responsibility between a door manufacturer and a door operator manufacturer.

Peelle Motorized Door may be operated manually at will. In cases of emergency, when manual operation is essential, elevator traffic continues without interruption. It is not necessary to disconnect any mechanical or electrical parts. During manual operation, the same automatic electro-mechanical locking features are retained. Equipment is fully protected electrically, which eliminates the possibility of injuring motors.

CONSTRUCTION OF MOTORIZED SHEAVES

The Peelle Motorized Sheaves have a large factor of safety and are assembled in heavy malleable iron housings. The motors are completely enclosed and protected from dust, dirt, and all foreign matter. All bearings have ground rollers with inner and outer ground races. All bearings are sealed at the factory after being packed with a semi-fluid lubricant. Provision is made for gun lubrication.

STANDARDIZATION OF MOTORIZED SHEAVES

Peelle Motorized Sheaves are standardized, produced in quantities, and carried in stock at all Peelle Branch Offices. The same Peelle Motorized Sheaves are used for either alternating or direct primary current. When available, 220-volt 3-phase 60-cycles a-c. is preferred.

CONTROL

Doors may be controlled in any manner that elevator control or other conditions demand. Doors are usually opened automatically as elevator is leveling, or with a momentary push button, when independent of elevator control, and closed with a constant pressure push button. Closing operation may also be controlled by elevator car switch. A stop button is always provided to stop doors in any position of opening or closing. Suitable automatic electro-mechanical interlocks, and cams are provided to meet state or municipal codes having jurisdiction. Interlocks require all doors to be closed before elevator can operate, and that only the door at which elevator is at rest, or leveling, will open.

COST OF OPERATION

The cost of operating Peelle Motorized Doors is extremely economical. Each door consumes ½ kv-a. The current is across the line approximately 3 seconds per operation for an 8-ft. high opening.

PEELLE MOTORIZED DOORS

MAINTENANCE

Cost of maintenance will not go beyond periodical greasing customarily given to elevator equipment.

SPACE REQUIREMENTS

To install Peelle Motorized Doors, no provision for extra space is required. Space between the elevator and shaft wall is the same as for manual doors. In the penthouse, no equipment is required that interferes with elevator machine and controller layout. Service power lines, a cutout switch having 15 amp. fuses, for each line of doors is all that need be provided by others.

WHEN TO USE PEELLE MOTORIZED DOORS

Peelle Motorized Doors may profitably be used where any of the following conditions exist:

All freight elevators having a speed of 150 ft. per minute or greater. The advantage of high elevator speed is lost unless the Peelle Doors are motorized.

On all self leveling elevators. Peelle Motorized Doors open while the elevator is leveling, thereby gaining considerable time over manual operation.

On all freight elevators having continuous traffic. Peelle Motorized Doors open immediately upon the arrival of the elevator at its destination. Opening and closing of the doors is not dependent upon physical endurance of the elevator operator. As the fatigue of the elevator operator increases, the speed of elevator traffic decreases when manually operated doors are used.

On all automatic push button controlled freight elevators. Cost of automatic elevators is justified only when used in conjunction with Peelle Motorized Doors.

On all elevators having doors at both ends of the shaft. Saves the time of the elevator operator walking to the door opposite the elevator car control.

On all elevators used for carrying freight that completely fills the elevator platform, which would make the latch of a manually operated door inaccessible to the elevator operator. Elevators may be loaded to capacity when the doors are motorized.

See pages 6, 7, 8, 9, 10 and 11 for space requirements.

PEELLE "REGULAR TYPE"
(PATENTED)
FREIGHT ELEVATOR DOORS

● FOR GENERAL USE FOR FREIGHT ELEVATOR OPENINGS IN COMMERCIAL OR INDUSTRIAL BUILDINGS WHERE THE MINIMUM SPANDREL HEIGHT ABOVE AND BELOW THE OPENING EQUALS HALF THE HEIGHT OF THE OPENING PLUS 6 INS.

STANDARD SPECIFICATIONS

(1) Scope of Work

Where indicated on the plans, and in strict accordance with the following specifications, furnish, deliver, and erect in complete working order, Peelle "Regular Type" counterbalanced freight elevator doors and appurtenances, as manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y.

(2) Work by Others

(2a) Frames—Steel frames and sills for the freight elevator door openings are specified elsewhere.

(2b) Painting—Finish painting of the freight elevator doors as specified elsewhere.

(2c) Power Supply—Electric service supply of — volts, 3 phase, 60 cycle; in the penthouse, for the use of freight elevator door contractor, is specified elsewhere.

(3) Doors

(3a) Construction—Doors shall be constructed of two-ply selected white pine, nailed, and covered with stretcher leveled, copper bearing steel, galvanized sheets, design, (select design from page 13). Doors shall be bolted into steel angle frames, astragals, shoe bars, and malleable iron milled groove shoes. Doors shall have movable lintels, where required. Upper edge of each lower door shall have a T-bar truckable sill, capable of supporting a trucking load equal to capacity of elevator. When door is open, truckable sill shall rest on malleable iron, adjustable stops. Doors shall run in steel guides, each pair connected with ⅝-in. adjustable turn-buckle rods, with No. 6 rustproof flexible cable chain running over double race ball bearing sheaves.

(3b) Operation—*Manual*—Doors shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when door is open.

Electric—Each door shall be equipped with Peelle Motorized electric operation, having individual motors for each door, and shall be entirely within shaft. Operators shall drive both sheaves of each door. Provision for emergency manual operation, and emergency exit from shaft, accessible from elevator, shall be made.

(3c) Control—(For Motorized Doors) A push button station for each line of doors marked "open," "close," and "stop," shall be placed on elevator within easy reach of elevator operator. Doors shall be arranged to open automatically as elevator arrives at a landing. Momentary pressure of "open" button shall open a door that has been closed without elevator having been moved. Momentary pressure of "stop" button shall stop the doors in any position. Constant pressure of the "close" button shall close doors. Limit switches shall terminate the opening and closing the doors. Note: Similar push button stations shall be furnished on the room side of each door for push button controlled elevators.

(4) Interlocks

All doors shall be equipped with the proper electric interlock equipment to prevent operation of elevator unless all of the doors are closed and locked, and to prevent the opening of doors excepting the one at which the elevator is at rest. An emergency release switch shall be placed on elevator car to make the interlocking systems inoperative in case of emergency.

(5) Car Gates

(5a) Construction—Vertical sliding steel gates shall be installed at open end of each elevator car. Car gates shall be constructed of No. 11 gauge, 1½-in. diamond wire mesh, having channel and angle iron frames, and equipped with malleable iron, milled groove shoes. Gates shall be of regulation height, and shall run in steel guides, connected to counterweights with No. 6 rustproof cable chain, running over malleable iron, turned groove sheaves. Counterweights shall run in steel guides, fully enclosed.

(5b) Operation—*Manual*—Car gates shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when gate is open.

Electric—Car gates shall be equipped with individual electric operators similar in design and construction to those specified for freight elevator doors.

(5c) Control—Motorized car gates shall operate simultaneously with the doors, and shall be controlled automatically from door control stations.

(6) Wiring

This specification includes all of the wiring to make a complete installation.

(7) Painting Included

All material, except metal covering on doors, shall have one shop coat of metallic primer.

(8) Co-operation with Other Trades

Freight elevator door contractor shall co-operate with other trades to obtain the most practical working conditions.

(9) Shop Drawings

Complete shop drawings shall be submitted for approval before manufacturing.

(10) Approval

Entire installation shall meet the approval of The Underwriters' Laboratories, Inc., State and Municipal Codes having jurisdiction.

(11) Guarantee

Entire installation shall be guaranteed by the manufacturer for a period of two years against defects in workmanship and materials.

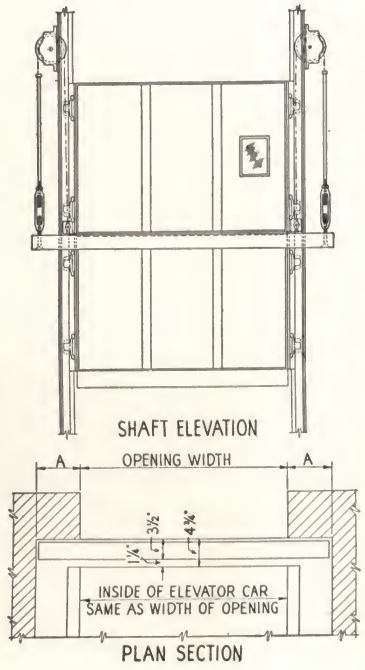
DETAILS OF PEELLE "REGULAR TYPE" FREIGHT ELEVATOR DOORS

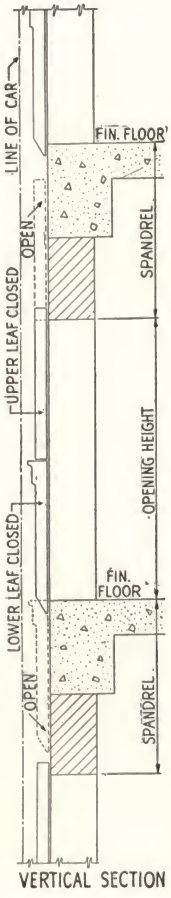
- **TYPE SHOWN IS METAL CLAD. FOR OTHER TYPES OF SURFACES AND DESIGNS, SEE PAGE 13**

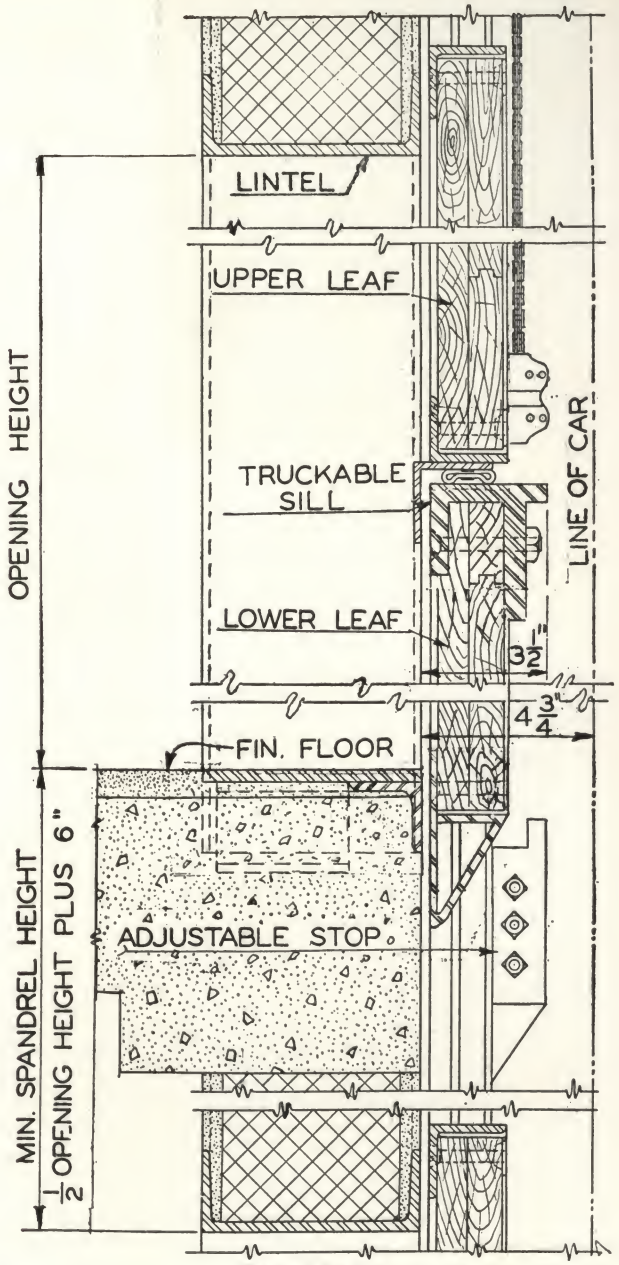
Schedule of "A" Dimensions ("A") Is Reversible

MOTORIZED DOORS—Any width of opening, car switch elevator, 11 and 12 ins. Exception—State of California, 11 and 13 ins.

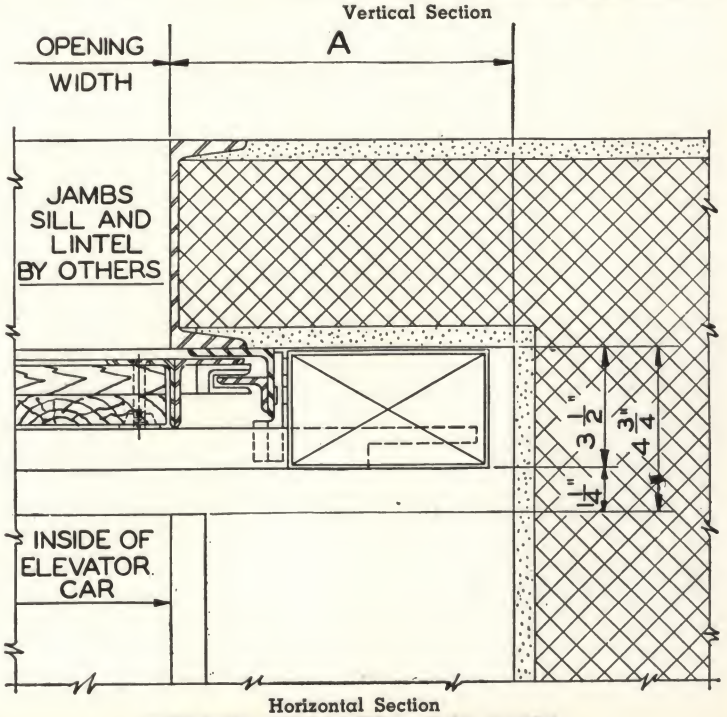
MANUAL DOORS—Openings up to 8 ft. 0 ins. wide, 7 ins. each side. Openings over 8 ft. 0 ins. wide, any elevator, 9 ins. each side.







Vertical Section



Horizontal Section
THROUGH PEELLE METAL CLAD DOORS

CONSTRUCTION DETAILS

Details show construction of doors and spaces required in elevator shaft for installation of Regular Type Doors.

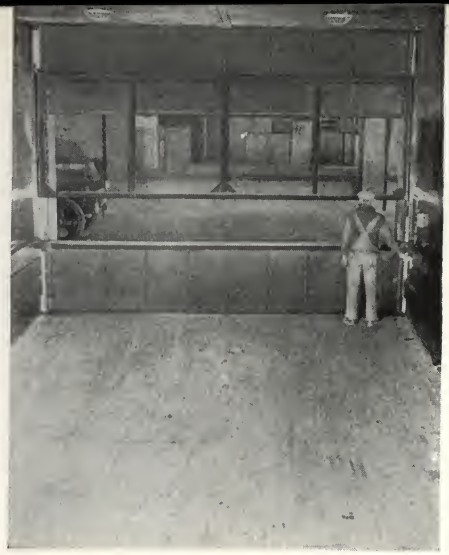
Minimum Spandrel Height—Is one half the opening height plus 6 ins. for either motorized, or manually operated doors. Where Regular Type Doors are used, the spandrel height at one floor limits the height of opening at that floor, and also height of opening at floor immediately above.

Minimum Jamb Return Space—Is measured horizontally on inside of shaft, from jamb of opening to return wall or nearest obstruction. For manually operated Regular Type Doors it varies from 7 to 9 ins., and for Motorized Doors it varies from 11 ins. to 12 ins. In special cases where these jamb returns are not available, consult THE PEELLE COMPANY.

Car Clearance—From flush shaft wall to edge of elevator platform is 4¾ ins. total for Regular Type Doors, 3½ ins. for the truckable sill of the door, plus 1¼ ins. running clearance for the elevator. Running clearance of elevator may, in case of emergency, be reduced to ¾ ins., giving total clearance of 4¼ ins. For normal tolerances in shaft construction, 4¾ ins. total clearance should be allowed in all cases wherever possible.

Minimum Pit Depth—Is one half the opening height of bottom landing shaft opening, plus 3 ins.

For design of doors, see page 13. For shaft opening frame details, see page 12. For interlocks and description of electrical apparatus of motorized doors, see page 5.



PEELLE PASS TYPE (PATENTED) FREIGHT ELEVATOR DOORS

- **FOR GENERAL USE FOR FREIGHT ELEVATOR OPENINGS IN COMMERCIAL, INDUSTRIAL AND OTHER TYPES OF BUILDINGS WHERE THE MINIMUM SPANDREL HEIGHT IS 10 INS.**

At Left:

Peelle Motorized Door and Car Gate on 60,000 Lb. Freight Elevator, N. Y. Port Authority Inland Terminal

STANDARD SPECIFICATIONS

(1) Scope of Work

Where indicated on the plans, and in strict accordance with the following specifications, furnish, deliver, and erect in complete working order, Peele Pass Type freight elevator doors and appurtenances, as manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y.

(2) Work by Others

(2a) Frames—Steel frames and sills for the freight elevator door openings are specified elsewhere.

(2b) Painting—Finish painting of the freight elevator doors as specified elsewhere.

(2c) Power Supply—Electric service supply of — volts, 3 phase, 60 cycle; in the penthouse, for the use of freight elevator door contractor, is specified elsewhere.

(3) Doors

(3a) Construction—Doors shall be constructed of two-ply selected white pine, nailed, and covered with stretcher leveled, copper bearing steel, galvanized sheets, design, (select design from page 13). Doors shall be bolted into steel angle frames, astragals, shoe bars, and malleable iron milled groove shoes. Doors shall have movable lintels, where required. Upper edge of each lower door shall have a T-bar truckable sill, capable of supporting a trucking load equal to capacity of elevator. When door is open, truckable sill shall rest on malleable iron, adjustable stops. Doors shall run in steel guides, each pair connected with ⅝-in. adjustable turn-buckle rods, with No. 6 rustproof flexible cable chain running over double race ball bearing sheaves.

(3b) Operation—*Manual*—Doors shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when door is open.

Electric—Each door shall be equipped with Peelle Motorized electric operation, having individual motors for each door, and shall be entirely within shaft. Operators shall drive both sheaves of each door. Provision for emergency manual operation, and emergency exit from shaft, accessible from elevator, shall be made.

(3c) Control—(For Motorized Doors) A push button station for each line of doors marked "open," "close," and "stop," shall be placed on elevator within easy reach of elevator operator. Doors shall be arranged to open automatically as elevator arrives at a landing. Momentary pressure of "open" button shall open a door that has been closed without elevator having been moved. Momentary pressure of "stop" button shall stop the doors in any position. Constant pressure of the "close" button shall close doors. Limit switches shall terminate the opening and closing the doors. Note: Similar push button stations shall be furnished on the room side of each door for push button controlled elevators.

(4) Interlocks

All doors shall be equipped with the proper electric interlock equipment to prevent operation of elevator unless all of the doors are closed and locked, and to prevent the opening of doors excepting the one at which the elevator is at rest. An emergency release switch shall be placed on elevator car to make the interlocking systems inoperative in case of emergency.

(5) Car Gates

(5a) Construction—Vertical sliding steel gates shall be installed at open end of each elevator car. Car gates shall be constructed of No. 11 gauge, 1½-in. diamond wire mesh, having channel and angle iron frames, and equipped with malleable iron, milled groove shoes. Gates shall be of regulation height, and shall run in steel guides, connected to counterweights with No. 6 rustproof cable chain, running over malleable iron, turned groove sheaves. Counterweights shall run in steel guides, fully enclosed.

(5b) Operation—*Manual*—Car gates shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when gate is open.

Electric—Car gate shall be equipped with individual electric operators similar in design and construction to those specified for freight elevator doors.

(5c) Control—Motorized car gates shall operate simultaneously with the doors, and shall be controlled automatically from door control stations.

(6) Wiring

This specification includes all of the wiring to make a complete installation.

(7) Painting Included

All material, except metal covering on doors, shall have one shop coat of metallic primer.

(8) Co-operation with Other Trades

Freight elevator door contractor shall co-operate with other trades to obtain the most practical working conditions.

(9) Shop Drawings

Complete shop drawings shall be submitted for approval before manufacturing.

(10) Approval

Entire installation shall meet the approval of the Underwriters' Laboratories, Inc., State and Municipal Codes having jurisdiction.

(11) Guarantee

Entire installation shall be guaranteed by the manufacturer for a period of two years against defects in workmanship and materials.

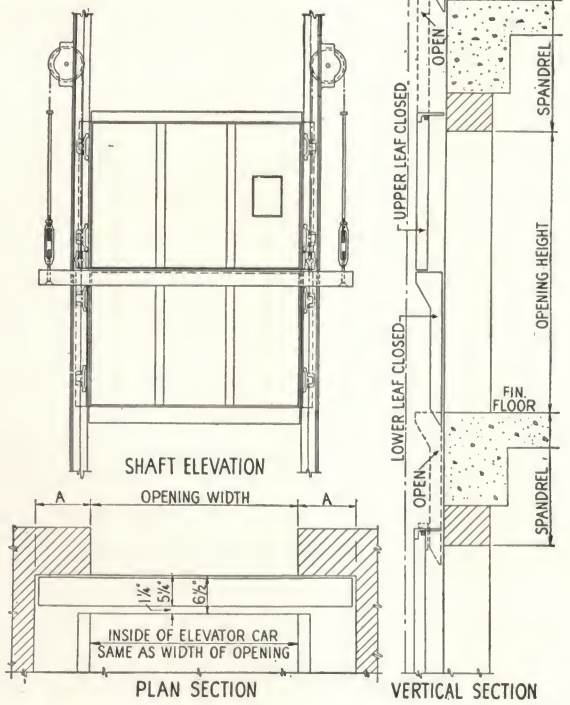
DETAILS OF PEELLE PASS TYPE (PATENTED) FREIGHT ELEVATOR DOORS

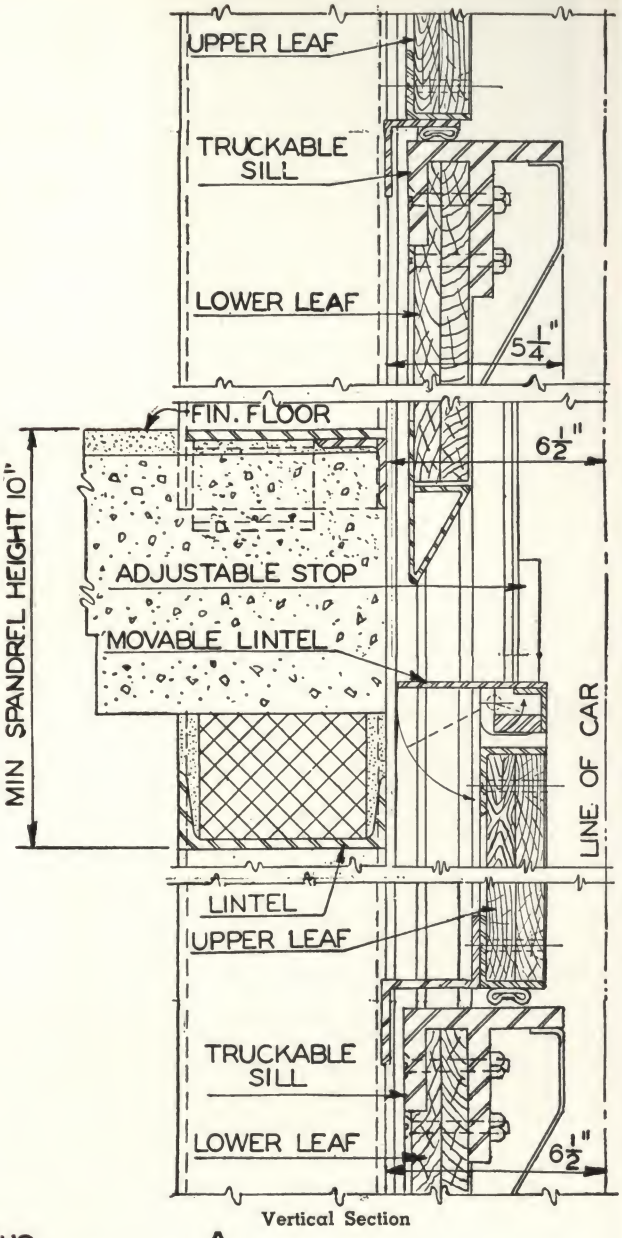
- **TYPE SHOWN IS METAL CLAD. FOR OTHER TYPES OF SURFACES AND DESIGNS, SEE PAGE 13**

Schedule of "A" Dimensions ("A") Is Reversible

MOTORIZED DOORS—Any width of opening, car switch elevator, 11 and 12 ins. Exception—State of California, 11 and 13 ins.

MANUAL DOORS—Openings up to 8 ft. 0 ins. wide, 7 ins. one side, 9 ins. opposite side. Openings over 8 ft. 0 ins. wide, all elevators, 9 ins. each side.





Vertical Section

CONSTRUCTION DETAILS

Details show construction of doors and spaces required in elevator shaft for installation of Peelle Pass Type Doors.

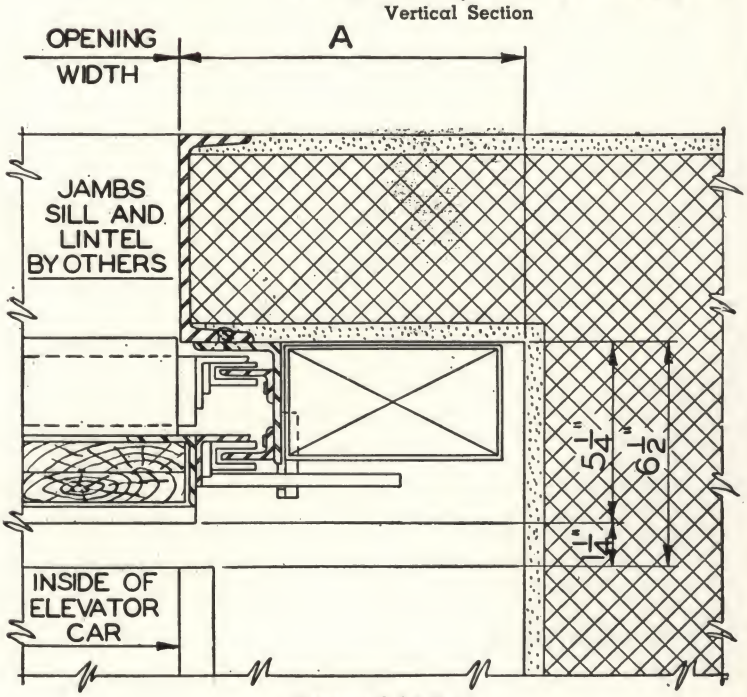
Minimum Spandrel Height—Is 10 ins. for either motorized, or manually operated doors. Where variation in spandrel heights for same line of shaft doors requires Pass Type Doors at some floors, and Regular Type Doors at other floors, regular door truckable sills are extended to take up same space in shaft as Pass Type Doors. All shaft walls shall be flush the full height of shaft. Regular Type Doors with extended sills are shown in vertical section.

Minimum Jamb Return—Is measured horizontally on inside of shaft, from jamb of opening to side wall of shaft or nearest obstruction. For manually operated Pass Type Doors it varies from 8 to 10 ins., and for Motorized Doors, from 11 ins. to 12 ins. In special cases where these return spaces are not available, consult THE PEELLE COMPANY.

Car Clearance—From flush shaft wall to edge of elevator platform is 6½ ins. total for Pass Type Doors, 5¼ ins. for truckable sill of door, plus 1¼ ins. running clearance for elevator. Running clearance for elevator may, in cases of emergency, be reduced to ¾ in., in which case total clearance would be 6 ins. For normal tolerances in shaft construction, 6½ ins. total car clearance should be allowed in all cases wherever possible.

Minimum Pit Depth—Is one half the opening height of the bottom landing shaft opening, plus 3 ins.

For designs of door, see page 13. For shaft opening frame details, see page 12. For interlocks and description of electrical apparatus for motorized doors, see page 5.



Horizontal Section
THROUGH PEELLE METAL CLAD DOORS

PEELLE SELF-SEALING TYPE
(PATENTED)
FREIGHT ELEVATOR DOORS

- SEAL SHAFT OPENINGS AGAINST SMOKE, ODORS, DUST, SOUND AND DRAFTS
- FOR USE IN OFFICE BUILDINGS, HOTELS, DEPARTMENT STORES, HOSPITALS, ETC., AS WELL AS FOR GENERAL USE

At Left:

Peelle Freight Elevator Door (Right Hand Door), Waldorf Astoria Hotel, New York, N. Y.

STANDARD SPECIFICATIONS

(1) Scope of Work

Where indicated on the plans, and in strict accordance with the following specifications, furnish, deliver, and erect in complete working order, Peelle Self-Sealing Type freight elevator doors and appurtenances, as manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y. They shall be designed so that both leaves of each door when closed shall make contact with the shaft opening frame at both jambs, lintel, and sill.

(2) Work by Others

(2a) Frames—Steel frames and sills for the freight elevator door openings are specified elsewhere.

(2b) Painting—Finish painting of the freight elevator doors as specified elsewhere.

(2c) Power Supply—Electric service supply of — volts, 3 phase, 60 cycle; in the penthouse, for the use of freight elevator door contractor, is specified elsewhere.

(3) Doors

(3a) Construction—Doors shall be constructed of two-ply selected white pine, nailed, and covered with stretcher leveled, copper bearing steel, galvanized sheets, design, (select design from page 13). The doors shall be so designed that both leaves shall seal against the wall at all four edges of the door opening when closed. Doors shall be bolted into steel angle frames, astragals, shoe bars, and malleable iron milled groove shoes. Upper edge of each lower door shall have a T-bar truckable sill, capable of supporting a trucking load equal to capacity of elevator. When door is open, truckable sill shall rest on malleable iron, adjustable stops. Doors shall run in steel guides, each pair connected with ⅝-in. adjustable turn-buckle rods, with No. 6 rustproof flexible cable chain running over double race ball bearing sheaves.

(3b) Operation—*Manual*—Doors shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when door is open.

Electric—Each door shall be equipped with Peelle Motorized electric operation, having individual motors for each door, and shall be entirely within shaft. Operators shall drive both sheaves of each door. Provision for emergency manual operation, and emergency exit from shaft, accessible from elevator, shall be made.

(3c) Control—(For Motorized Doors) A push button station for each line of doors marked "open," "close," and "stop," shall be placed on elevator within easy reach of elevator operator. Doors shall be arranged to open automatically as elevator arrives at a landing. Momentary pressure of "open" button shall open a door that has been closed without elevator having been moved. Momentary pressure of "stop" button shall stop the doors in any position. Constant pressure of the "close" button shall close doors. Limit switches shall terminate the opening and closing the doors. Note: Similar push button stations shall be furnished on the room side of each door for push button controlled elevators.

(4) Interlocks

All doors shall be equipped with the proper electric interlock equipment to prevent operation of elevator unless all of the doors are closed and locked, and to prevent the opening of doors excepting the one at which the elevator is at rest. An emergency release switch shall be placed on elevator car to make the interlocking systems inoperative in case of emergency.

(5) Car Gates

(5a) Construction—Vertical sliding steel gates shall be installed at open end of each elevator car. Car gates shall be constructed of No. 11 gauge, 1½-in. diamond wire mesh, having channel and angle iron frames, and equipped with malleable iron, milled groove shoes. Gates shall be of regulation height, and shall run in steel guides, connected to counterweights with No. 6 rustproof cable chain, running over malleable iron, turned groove sheaves. Counterweights shall run in steel guides, fully enclosed.

(5b) Operation—*Manual*—Car gates shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floors, when gate is open.

Electric—Car gates shall be equipped with individual electric operators similar in design and construction to those specified for freight elevator doors.

(5c) Control—Motorized car gates shall operate simultaneously with the doors, and shall be controlled automatically from door control stations.

(6) Wiring

This specification includes all of the wiring to make a complete installation.

(7) Painting Included

All material, except metal covering on doors, shall have one shop coat of metallic primer.

(8) Co-operation with Other Trades

Freight elevator door contractor shall co-operate with other trades to obtain the most practical working conditions.

(9) Shop Drawings

Complete shop drawings shall be submitted for approval before manufacturing.

(10) Approval

Entire installation shall meet the approval of the Underwriters' Laboratories, Inc., State and Municipal Codes having jurisdiction.

(11) Guarantee

Entire installation shall be guaranteed by the manufacturer for a period of two years against defects in workmanship and materials.

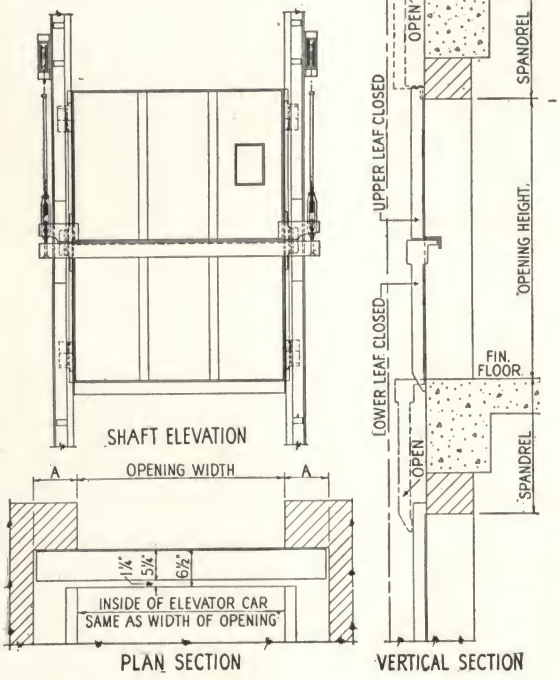
DETAILS OF PEELLE SELF-SEALING TYPE (PATENTED) FREIGHT ELEVATOR DOORS

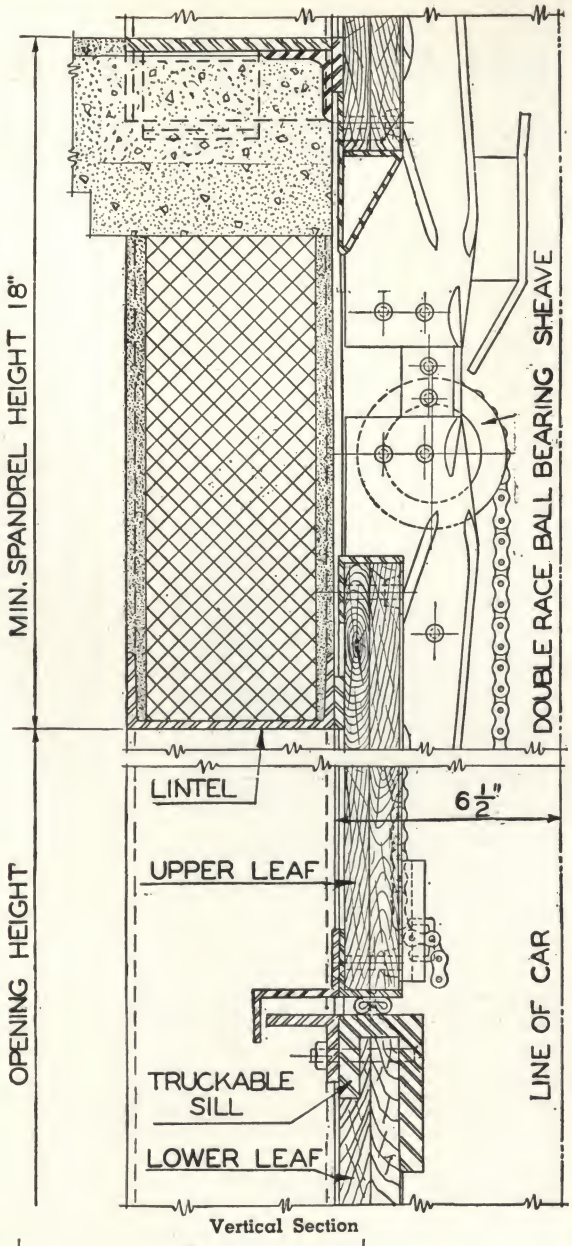
- TYPE SHOWN IS METAL CLAD. FOR OTHER TYPES OF SURFACES AND DESIGNS, SEE PAGE —

Schedule of "A" Dimensions ("A") Is Reversible

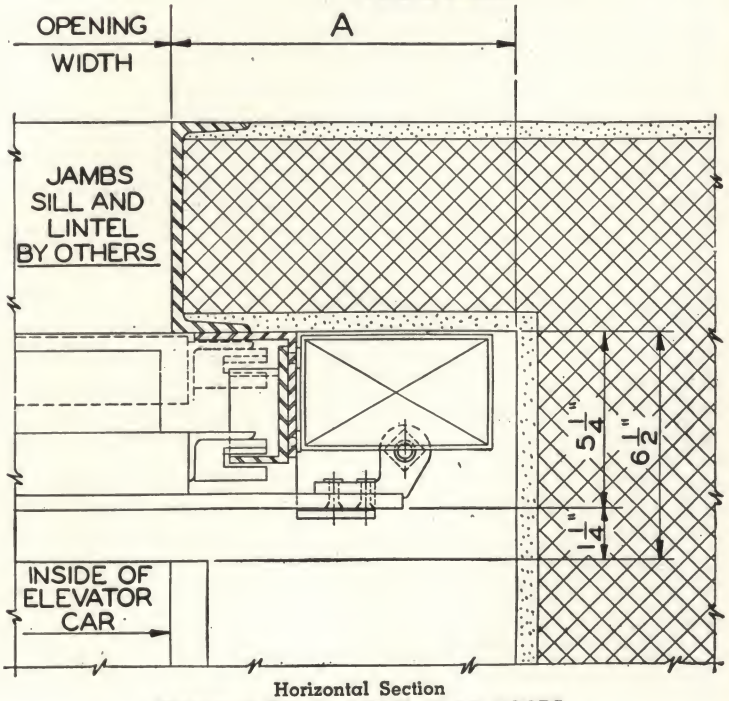
MOTORIZED DOORS—Any width of opening, car switch elevator, 11 and 12 ins. Exception—State of California, 11 and 13 ins.

MANUAL DOORS—9 ins. each side.





Vertical Section



Horizontal Section
THROUGH PEELLE METAL CLAD DOORS

CONSTRUCTION DETAILS

Details show construction details and spaces required in shaft for installation of Peelle Self-Sealing Doors.

Minimum Spandrel Height—Is 18 ins. for either motorized or manually operated doors.

Minimum Jamb Return—Is measured horizontally on inside of shaft, from jamb of opening to side wall, or nearest obstruction. For manually operated Self-Sealing Doors it is 8 ins. at each jamb, and for Motorized Doors, from 11 ins. to 12 ins. In special cases where these return spaces are not available, consult THE PEELLE COMPANY.

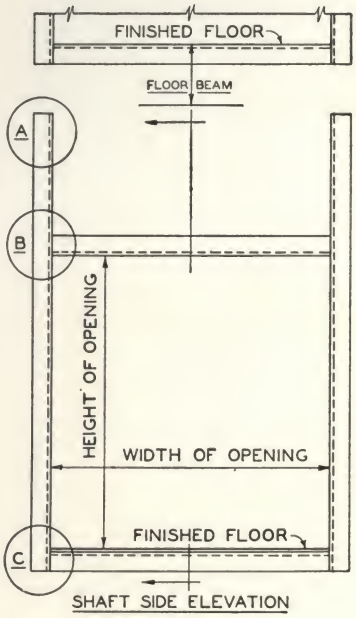
Car Clearance—From flush shaft wall, in which openings occur, to edge of elevator platform is 6½ ins. total for Self-Sealing Doors, 5¼ ins. for the truckable sill of door plus 1¼ ins. running clearance for elevator. Running clearance for elevator may, in case of emergency, be reduced to ¾ in. in which case the total clearance would be 6 ins. To allow for normal tolerances in shaft construction, 6½ ins. total clearance should be allowed in all cases wherever possible.

Minimum Pit Depth—Is one half of bottom landing shaft opening height plus 3 ins.

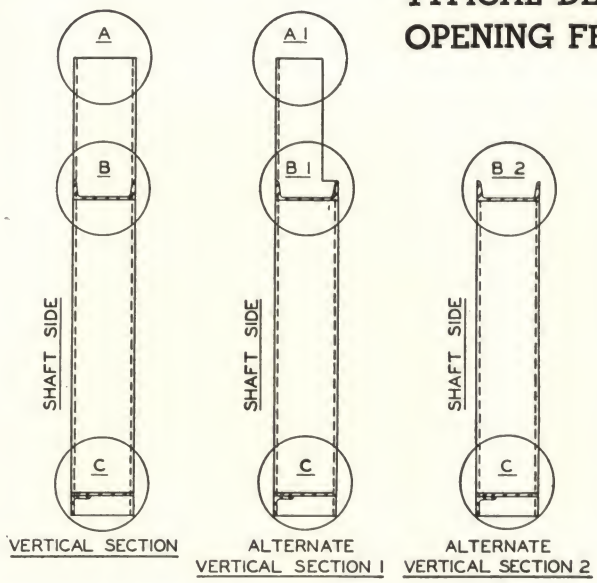
For design of doors, see page 13. For shaft opening frame details, see page 12. For interlocks and description of electrical apparatus for motorized doors, see page 5.

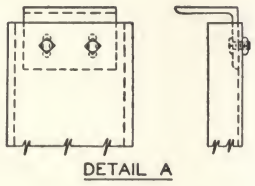
THE PEELLE COMPANY

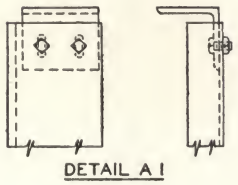
SHAFT OPENING FRAMES
REQUIRED FOR PEELLE FREIGHT ELEVATOR DOORS

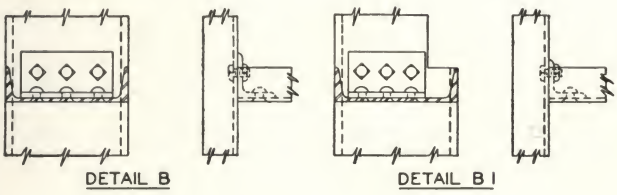


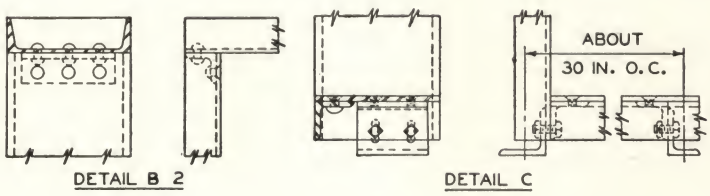
TYPICAL DETAILS OF SHAFT OPENING FRAME CONNECTIONS











TYPICAL DETAILS

Although the shaft opening frames for Peelle Doors are usually furnished by the miscellaneous iron contractor, this sheet of details is submitted to help the architect design the shaft openings to obtain the best practical result.

Steel frames in the shaft openings not only provide a substantial fastening for the door guides, but also provide an accurate base, or datum from which the door manufacturer may work. Steel frames also protect the masonry from damage by heavily loaded trucks.

SHAFT SIDE ELEVATION

The upper left hand corner "shaft side elevation" shows a typical frame. Shaft opening frames are usually constructed of channels 1 in. deeper than the thickness of the masonry wall. This allows for plastering if required.

Freight elevator shafts are seldom plastered on the shaft side, and only occasionally on the room side. Where the outside of the shaft wall is not plastered, it should be specified that the masonry contractor should point up between the leg of the channel and the wall around the opening.

Frames may, if desired, be exactly the same depth as the masonry, but this construction requires considerable labor to cut the masonry to fit the channels. Whether the frames are constructed of channels 1 in. deeper than the masonry wall, or the same depth, the finished shaft is measured from shaft side face of the channel leg.

VERTICAL SECTION

"Vertical Section" shows a frame where it is not intended to plaster the room side of the shaft.

ALTERNATE VERTICAL SECTION 1

"Alternate Vertical Section 1" shows a frame where it is intended to plaster the room side of the shaft. Note the room side leg of the channel is cut out above the lintel. This construction reveals the frame only around the opening on the room side. The "Alternate Vertical Section 2" shows a frame where the vertical, or jamb members extend to the lintel only. This construction is permissible where the shaft is constructed of at least 8-in. brick, or 8-in. concrete.

DETAILS A, A1, B, B1, B2 AND C

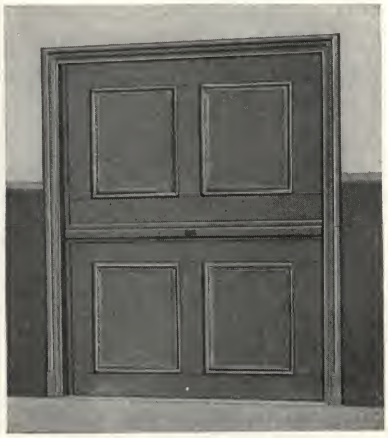
Details A, A1, B, B1, B2 and C suggest methods of construction. These details may be modified to suit the standard practice of the fabricator.

PEELLE DOOR DESIGNS
FOR FREIGHT ELEVATOR DOORS

- PEELLE FREIGHT ELEVATOR DOORS CAN BE MADE TO ANY DESIRED ARCHITECTURAL DESIGN AND FINISH
- ALL STANDARD DESIGNS APPLY EQUALLY TO ALL TYPES OF PEELLE FREIGHT ELEVATOR DOORS

R-10 Galvanized Metal Covered Door, with Flush Panels
R-9 without observation light
R-11 with two observation lights

K-3 Kalamein Panelled Door, Three Solid Panels in Each Half



K-1 Kalamein Panelled Door, Two Solid Panels in Each Half

O-9 Kalamein Panelled Door, with Standard Size Steel Sash in the Upper Half

STANDARD DESIGNS

DESIGNS

Peelle Freight Elevator Doors can be made to any desired architectural design. Four standard designs are shown on this page which have been found to be very generally useful.

Designs R-9, or R-10, are standard for use in industrial buildings, where fine finish is not a consideration. The other designs show panelled doors which are suitable in the large majority of cases.

All standard designs apply equally to all types of Peelle Freight Elevator Doors.

Peelle Doors for service and freight elevators in office buildings, hotels, department stores, hospitals, sanitariums, museums, etc., are frequently built to architectural designs harmonizing with the surrounding decorations.

GENERAL FEATURES

Glass—The legal maximum glass surface in any one door is 144 sq. in. except for exterior doors which may have larger glass area.

All doors having observation lights are furnished including the glass. Doors having glass of a larger area than observation light are not furnished with the glass.

Underwriters' Label—The label of the Underwriters' Laboratories can be furnished on all Peelle Freight Elevator Doors. In such doors one 8 in. x 10 in. clear wire glass panel is standard, or two glass panels, the total area not exceeding 144 sq. in.

Painting—All standard metal doors and hardware, except the galvanized covering, receive one shop coat of metallic primer. Special painting, enamel or grained finish will be done when so specified.

SPECIAL DESIGNS

We desire to emphasize that there is no need for the architect, because of any esthetic reason, to hesitate using Peelle Freight Elevator Doors. We are prepared to execute designs in bronze, rust resisting steel alloys or any other metal, plain or ornamental, in accordance with the best standards of craftsmanship in use in the metal covered, hollow metal or ornamental metal trades.

Any desired finish whether to specifications or to sample may be obtained, including any kind of paint, enamel, baked enamel, imitation wood grained or special metal finish.

Phantom View from Room Side

Shaft Side View

PEELLE DUMBWAITER DOORS

- COUNTERBALANCED DOOR UNITS, FACTORY-ASSEMBLED, AND READY FOR SETTING INTO MASONRY WALL DURING CONSTRUCTION
- FOR USE WITH ELECTRIC OR HAND-POWER DUMBWAITERS; ALSO WITH SURVEYORS AND CONVEYORS; ALSO TRAYVEYORS

GENERAL DESCRIPTION

The Peelle Dumbwaiter Door unit is a counterbalanced door, mounted in steel guides with a combination pressed metal frame trim, and shelf. The entire unit is assembled in the factory, ready for setting into the masonry wall during construction.

UNDERWRITERS' LABEL

Peelle Dumbwaiter Door Units bear the label of the Underwriters' Laboratories, Inc.

USES

Peelle Dumbwaiter Doors are used with electric or hand power dumbwaiters, subveyors, conveyors or trayveyors in hospitals, hotels, clubs, and office buildings. Doors of a similar construction, or doors that slide up in one section are used with laundry and package chutes.

CONVENIENCE

The door operates on the inside of the shaft, and takes up no floor space in opening or closing. It is adaptable to any plan arrangement. Each door has a 3-in. observation light so that the dumbwaiter is visible with the door closed.

DURABILITY

Unit is built of steel throughout. There are no parts to wear out, or weights to drop off. A heavy flat link chain connects the two door sections. Sheaves are double duty ball bearing type.

OPERATION

The two halves of each door are perfectly balanced, and have malleable shoes to eliminate friction. This construction, in conjunction with ball bearing sheaves, provides easy and swift opening and closing.

SAFETY

Each unit, for electric dumbwaiters, is provided with an electric interlock to prevent the operation of the dumbwaiter except when all doors in the shaft are closed.

Each door is also equipped with an automatic lock that prevents the door being opened except when the dumbwaiter is at the landing.

ERECTION

The doors, frames, guides and hardware are assembled in the factory to make a complete working unit. No field erection is required. The unit is built into the masonry wall like a window frame.

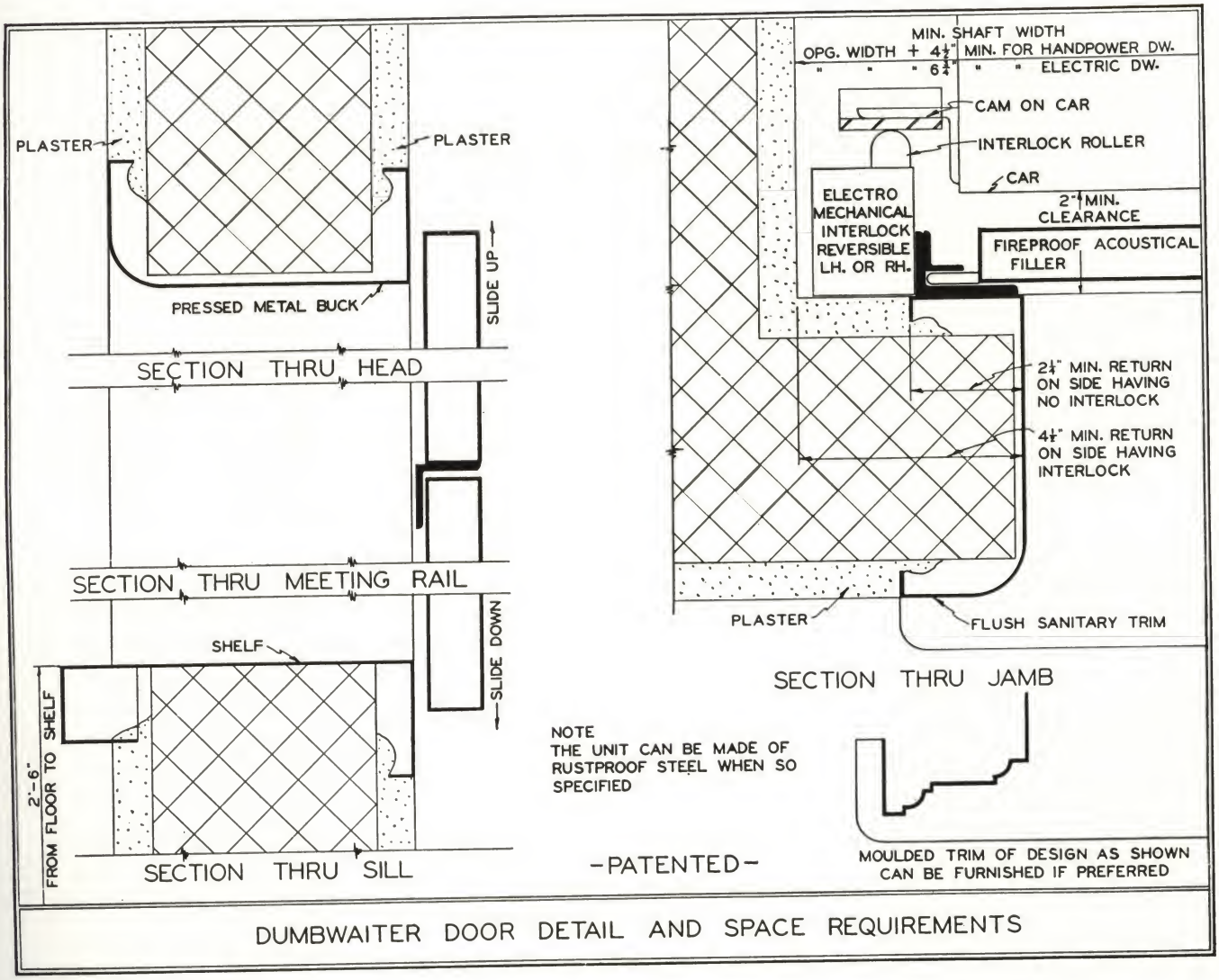
ECONOMY

The first cost is the last cost. This unit saves maintenance and upkeep, saves floor space, saves time in opening and closing, and saves field erection.

APPEARANCE

The frame is of pressed metal, with a neat trim, mitered and welded at the corners. The unit as a whole is designed to present a pleasing architectural appearance. When specified, the doors can be furnished in solid color or grained, baked enamel finish. Trim, frame, shelf and doors can also be furnished in stainless steel, aluminum or bronze.

DETAILS AND SPACE REQUIREMENTS OF PEELLE DUMBWAITER DOORS



• STANDARD SPECIFICATIONS

Dumbwaiter Doors

The openings to the dumbwaiter shall be provided with Peelle Standard Dumbwaiter Door Units as manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y.

The doors shall be horizontally divided, counterbalanced, completely assembled with steel guides, integral frame and trim, ready for setting into the masonry wall by the general contractor.

The door sections shall be constructed of two thicknesses of 16-gauge flat steel sheets reinforced at all edges with channels. The door sections shall be connected to each other with flat link cable chain running over malleable iron, double race ball bearing, turned groove sheaves.

Each door shall be equipped with a 3-in. observation light. Each door shall bear the label of the Underwriters', Inc.

The integral frame and trim units shall be made to fit a masonry wall of (4 in.) (5 in.) (6 in.) thick, with allowance for plaster on (one or both) sides.

The assembled units shall have one prime coat of paint before shipment, to be finished by others on the job.

The doors shall be guaranteed for two years against defects in workmanship and materials by the manufacturer.

Doors, trim, frame and sill can be furnished in stainless steel, aluminum or bronze, when so specified.

Dumbwaiter Door Locks (For Electric Dumbwaiter)

Each of the Peelle Dumbwaiter Door Units shall be equipped with the Peelle combination interlock and automatic lock. The wiring of the interlock and installation of the cam for operating the automatic locks shall be done by the dumbwaiter manufacturer.

THE PEELLE COMPANY

BROOKLYN, N. Y.

DISTRICT OFFICES

ATLANTA, GA., 212 Red Rock Bldg.—Telephone, Jackson 2284
BALTIMORE, MD., 213-217 East Street—Telephone, Calvert 2318
BOSTON, MASS., 66 Western Ave. (Allston)—Telephone, Stadium 2244
CHICAGO, ILL., 100 North LaSalle St. at Washington—Telephone, Central 6475
CINCINNATI ,OHIO, 5901 Kennedy Ave.—Telephone, Jefferson 3565
CLEVELAND, OHIO, 521 Caxton Bldg.—Telephone, Main 4053
DALLAS, TEX., 2200 Cedar Springs Ave.—Telephone 2-8125
DETROIT, MICH., 1240 Buhl Bldg.—Telephone, Cadillac 1925
HARRISBURG, PA., P. O. Box 853—Telephone, 3-4126
INDIANAPOLIS, IND., 501 New City Trust Bldg.—Telephone, Humboldt 4767
KANSAS CITY, MO., 1004 Baltimore Ave.—Telephone, Harrison 1193
LOS ANGELES, CALIF., 1046 South Olive St.—Telephone, Prospect 0776
PHILADELPHIA, PA., Architects Bldg., 17th and Sansom Sts.—Telephone, Rittenhouse 2274
PITTSBURGH, PA., 1052 Century Bldg.—Telephone, Atlantic 8790
PORTLAND, ORE., East 8th and Market Sts.—Telephone, 0188
RICHMOND, VA., 511 Atlantic Life Building—Telephone (Dial) 3-5712
SAN DIEGO, CALIF., Post Office Box 727
SAN FRANCISCO, CALIF., 516 Call Bldg.—Telephone, Douglas 7969
SCRANTON, PA., Cedar Ave. at Laurel Line—Telephone, 3-1271
SEATTLE, WASH., 401 White Bldg.—Telephone, MA7650
ST. LOUIS, MO., 16th and O'Fallon—Telephone, Chestnut 1395
SYRACUSE, N. Y., 145 Harding Pl.—Telephone, 9-2733
TAMPA, FLA., 805 Peninsular Telephone Bldg.—Telephone 2868
WASHINGTON, D. C., 350 Washington Bldg.

RICHMOND

TRADE **Fyrgard** MARK

PRODUCTS

- METAL DOOR FRAMES
- KALAMEIN DOORS, FRAMES & TRIM
- HOLLOW METAL DOORS
- FREIGHT ELEVATOR DOORS
- DUMBWAITER ENCLOSURES
- FIRE DOORS & HARDWARE
- SWING-FOLD & BI-FOLD DOORS
- ELECTRIC DOOR OPERATORS
- COPPER-BRONZE-ALUMINUM & STAINLESS STEEL KALAMEIN PRODUCTS

THE RICHMOND FIREPROOF DOOR COMPANY
RICHMOND, INDIANA

THE COMPANY and Its Facilities

Richmond "Fyrgard" products may be found in active service in America's foremost structures.

Their design, beauty, permanence and long service have fully met the needs of architects, contractors and owners for more than forty-two years.

Our modern plant, ample manufacturing facilities and a "door-minded" organization long experienced in their design and production is the guarantee behind "Fyrgard" products.

Consult your local "Fyrgard" representative or write direct for complete catalogues.

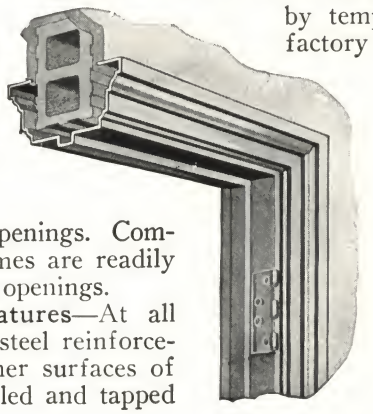
THE RICHMOND FIREPROOF DOOR COMPANY

TELEPHONE, 6777 — RICHMOND, IND. — ESTABLISHED 1891

Branch Offices and Agents with Sales, Erection and Service Facilities in 90 Principal Cities Throughout the United States

List on Back Cover

Metal Frames, Formed and Rolled



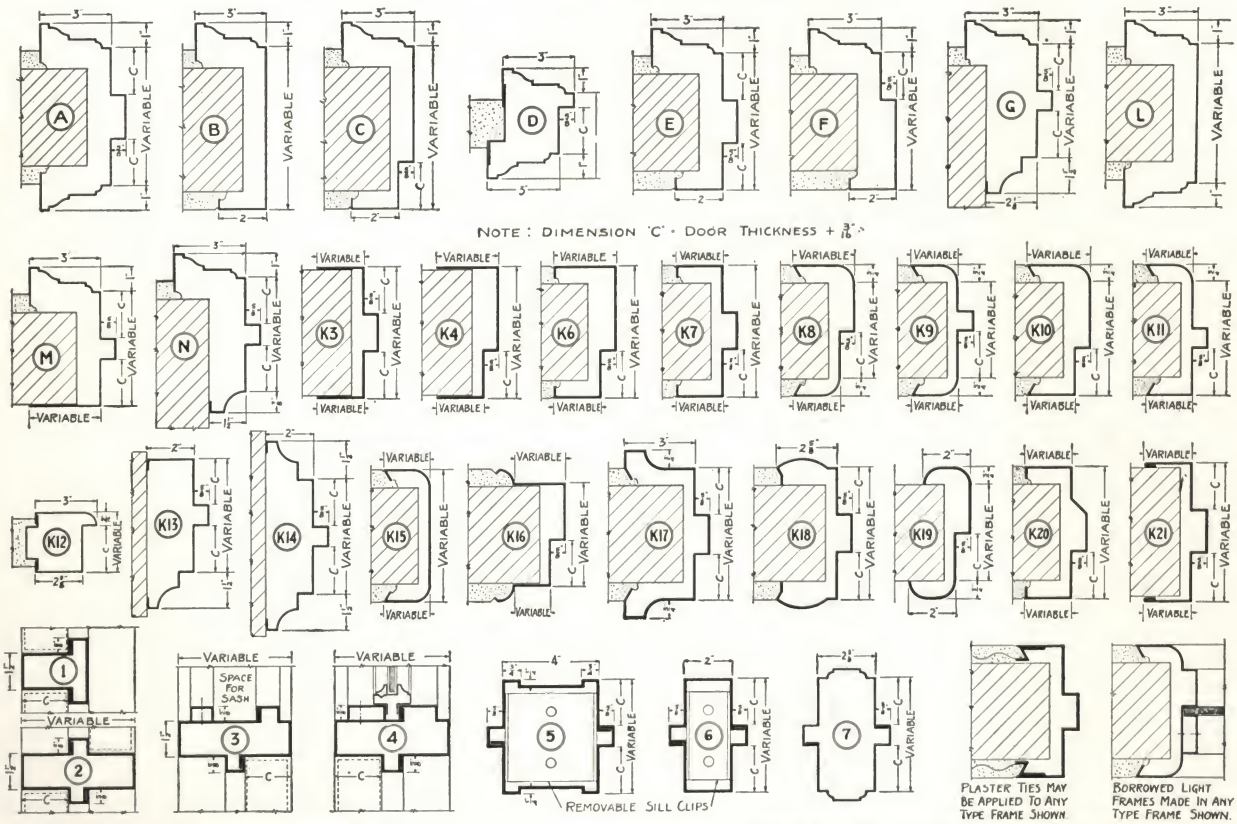
RICHMOND metal frames are distinguished by a new beauty and sharpness of line, made possible through the use of our specially designed machinery.

The standard types shown on this page provide integral buck and trim for all interior door openings. Combinations of Types B and C frames are readily utilized for sliding elevator door openings.

Richmond Construction Features—At all hinge and strike plate locations, steel reinforcements are spot-welded to the inner surfaces of the jambs. Holes accurately drilled and tapped by templates through these reinforcing plates at the factory are provided for the rapid attachment of the hardware.

Plaster guards of 24-gauge galvanized steel, welded inside of the reinforcing plates protect the screwholes from mortar and plaster. This saves time in the attachment of the hardware.

Adjustable anchors, made of 16-gauge stock, are furnished with Richmond steel frames. These anchors can be set wherever desired between courses of a masonry wall as the wall is built. The anchors require no adaptation of plan, yet bond frames solidly to finished wall.



RICHMOND KALAMEIN DOORS, FRAMES AND TRIM . . .

DOORS, frames, and trim furnished to any dimension, and any design illustrated. All types are standard in construction and thickness. Designs other than shown supplied upon request.

Kalamein swing doors may be furnished with or without Underwriters' label in accordance with construction.

Hollow metal mouldings, built into grooves in the stiles and rails or held by concealed clips, and machine pre-formed 24-gauge stretcher leveled metal covering are features of "Fyrgard" Doors.

Kalamein frames covered with tight fitting machine applied 24-gauge metal are smooth, with sharp, true lines. Kalamein frames cannot bear Underwriters' labels. If labeled frames are required, refer to our labeled all-metal frames.

Cores of all Richmond Kalamein doors, frames, casings, and moulds are machined from solid stock up to standard lengths.

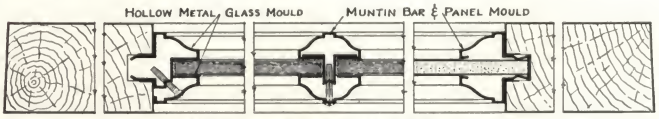
Metal covered plinths of any design furnished upon request.

Standard finish—gray metallic primer. Durable baked enamel in plain color or wood grain applied in our factory when specified.

Specifications for Richmond Non-labeled Kalamein Doors

All metal covered doors shall be of the "Fyrgard" type as manufactured by THE RICHMOND FIREPROOF DOOR COMPANY.

Wood cores shall be of selected non-resinous spruce or white pine, kiln dried by door manufacturer. Stiles shall extend full height of door, and rails shall be tenoned into stiles. Wood cores shall be covered with 24-gauge zinc coated sheet metal tightly drawn so as to lie smooth. All joints between rail and stile metal shall be locked by lapping and nailing to wood cores. Seams then to be soldered and ground smooth.



SECTION THROUGH GLASS LIGHTS & PANEL
NON-LABELED CONSTRUCTION

Panels shall also be covered with 24-gauge zinc coated sheet metal. Panel sheets shall be glued to ¼-in. sheet rock and held under high pressure until glue is set. Panels shall be set in hollow metal panel moulds in such a manner as to eliminate the use of nails, screws or concealed clips.

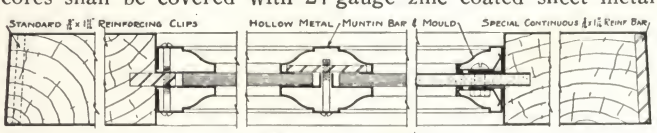
Glass shall be set in glass sash set in grooves of rails and stiles. Removable glass stops to be held in place with self-tapping sheet metal screws.

All doors shall be given one shop coat of special gray primer paint for galvanized iron.

Specifications for Richmond Labeled Kalamein Doors

All metal covered doors shall be of the approved Underwriters' "Fyrgard" type as manufactured by THE RICHMOND FIREPROOF DOOR COMPANY.

Wood cores shall be of selected non-resinous spruce or white pine, kiln dried by door manufacturer. Stiles shall extend full height of door, and rails shall be tenoned into stiles. Wood cores shall be covered with 24-gauge zinc coated sheet metal tightly drawn so as to lie smooth. All joints between rail and stile metal shall be locked, soldered and ground smooth.



SECTION THROUGH GLASS LIGHTS & PANEL
UNDERWRITERS LABEL CONSTRUCTION

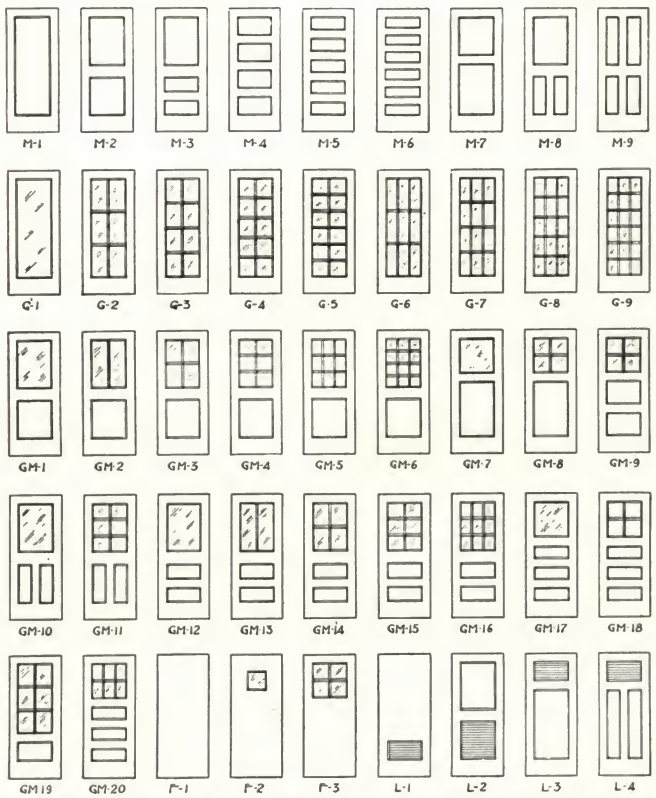
Panels shall be covered with 24-gauge zinc coated sheet metal glued to ¼-in. asbestos and held under high pressure until glue is set. The panel shall extend into grooves in stiles and rails ½ in. and be secured to core covering with $\frac{8}{16}$-in. bolts spaced not to exceed 10 in. on center.

Panel moulding shall be hollow metal; mitred, brazed, and attached to door with concealed clips.

Where glass openings are specified, doors shall have the glass area surrounded by a ¼x⅞-in. steel frame to which hollow metal glass mould and muntin bars are attached. Fixed muntin bar members shall be reinforced with ⅛x1½-in. bar steel for attachment of removable members.

All doors shall be given one shop coat of special gray primer paint for galvanized iron.

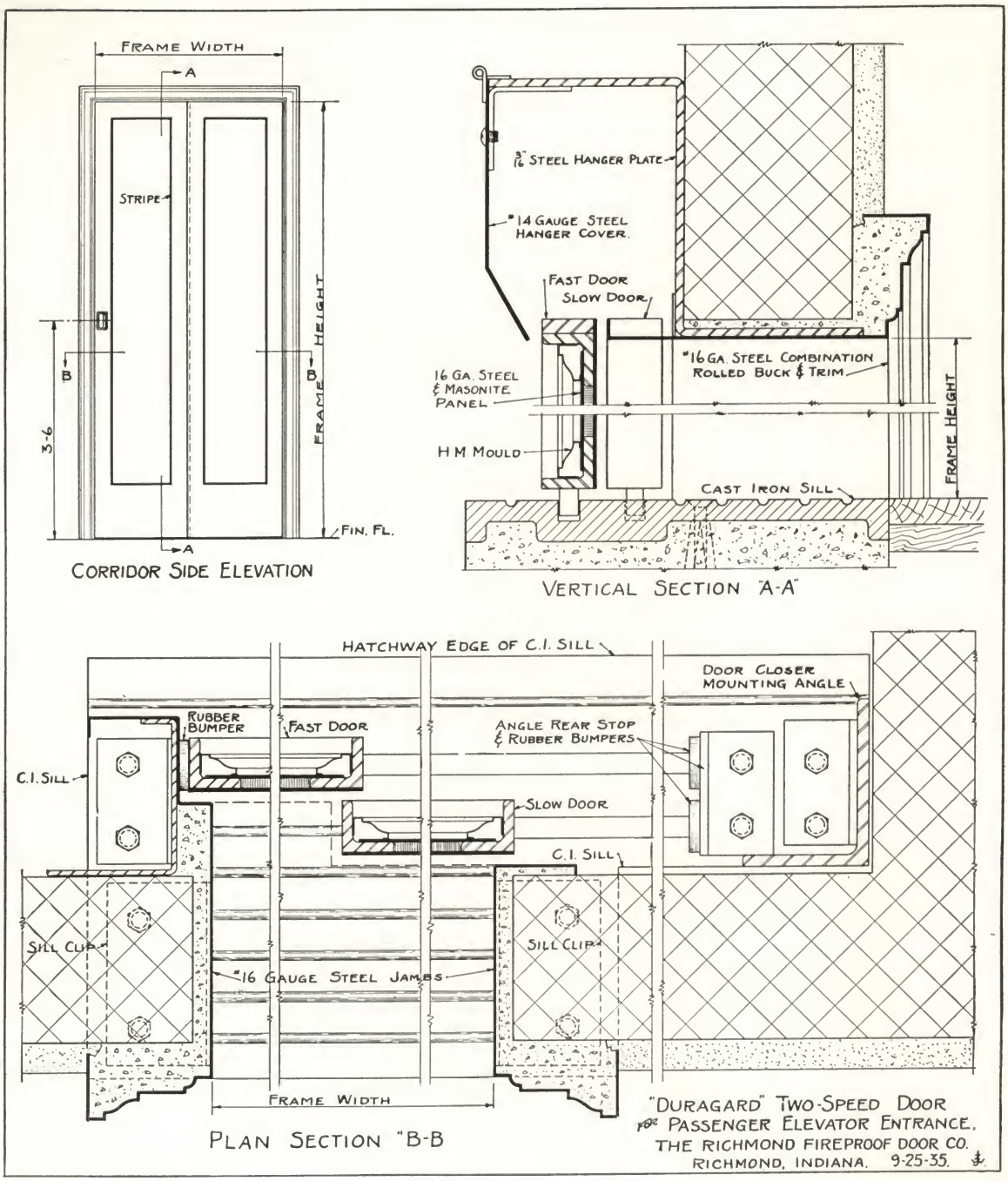
Richmond Standard Types of Kalamein Doors



A Few of our Recent Aluminum, Bronze, Steel and Passenger Elevator Kalamein Installations

Bridgeport Brass Co., New Haven, Conn.
Pumping Station, Blue Plains, D. C.
American Can Co., Tampa, Fla.
General Motors Research Laboratory Bldg., Detroit, Mich.
Montgomery Ward & Co., Missoula, Mont.
Riverton School, Riverton, N. J.
Asylum for Deaf and Dumb, Santa Fe, N. M.
Pullman Co., Long Island City, New York, N. Y.
Village and Community Hall, Cleveland, Ohio
Delaware Bridge Commission, Philadelphia, Pa.
Washington High School, Sioux Falls, S. D.
S. H. Kress Store, Nashville, Tenn.
U. S. Post Office and Courthouse, San Antonio, Tex.
Salsbury Co., Salt Lake City, Utah
Middlebury College, Middlebury, Vt.
Kraft Phoenix Cheese Corp., Green Bay, Wis.

RICHMOND "DURAGARD" PASSENGER ELEVATOR ENTRANCE SLIDING DOOR



The "Duragard" Door was developed especially for passenger elevator entrances, and car riding doors where cars are completely enclosed.

This door is constructed of a heavy angle panel frame and double sheet steel insulated panel weld-assembled. It is very rigid and durable, yet is only $1\frac{5}{16}$ in. thick. (Other thicknesses if specified.)

It may be finished in baked enamel to match the opening frame or car interior. Standard finish is black Duco with gold stripe on corridor side.

"Duragard" Doors are adaptable for single, two, or multiple speed sliding and center-parting units. We are prepared to furnish these doors with hardware, opening frames (see page 2) and sills—a complete unit—and equip them with "DM" Electric Operators (see page 15).

A Vertical Series of hatchway doors with a car door, all electrically operated and interlocked provides a complete and ideal installation, for the finest apartment or office building, that will be trouble-free and give long uninterrupted service.

For further information consult your nearest Richmond Agency or Home Office.

RICHMOND *Counterbalanced* FREIGHT ELEVATOR DOORS

Typical First Floor View in a National Parking Garage
Richmond Doors Illustrated have bronze covered panels

FOR more than thirty years Richmond has been building Counter-balanced and Vertical Telescoping Freight Elevator doors to fit every conceivable condition. These early installations are still giving active satisfactory service.

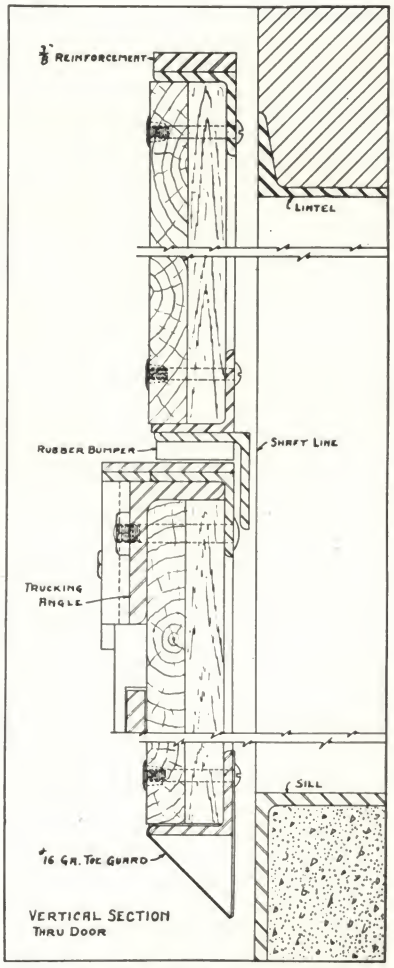
In a comparatively recent installation in the National Parking Garage at Chicago, 283 Richmond doors 14 ft. 6 in. wide by 8 ft. high were required. (See illustration.) These doors weighed approximately 1800 lbs. each in addition to the trucking load sustained, they are power operated, opening or closing in four seconds.

Richmond has to her credit numerous other installations of exceptionally large doors that are giving satisfactory service. Richmond Elevator doors are built for service,—long continuous service that is free from expensive repairs.

GENERAL

Counterbalanced elevator doors, being installed entirely within the hatchway do not occupy floor space, thus maximum clear openings are provided. They are made in two sections and hung so that in opening the lower section slides downward and the other upward. They differ from Vertical Telescoping doors where both sections slide upward, the upper half at one-half the speed of the lower.

Richmond Counterbalanced doors are hung on steel cable chain and ball bearing sheaves and slide in steel angle guides. They may be of various designs or styles as shown on the following pages, may bear the Underwriters' standard or "Oversize" labels, may be manually or electrically operated, and interlocked with the elevator circuit. Doors for openings more than 8 ft. wide by 10 ft. high are "Oversize" and have reinforced trucking sills. See the following pages for details.

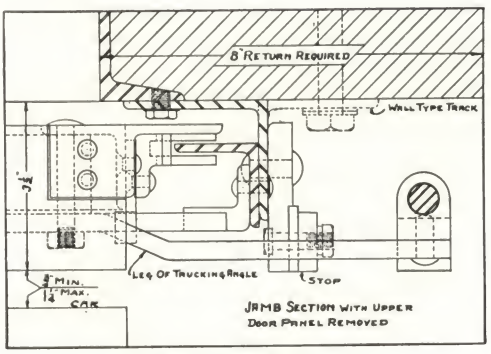


Vertical Section Regular Door

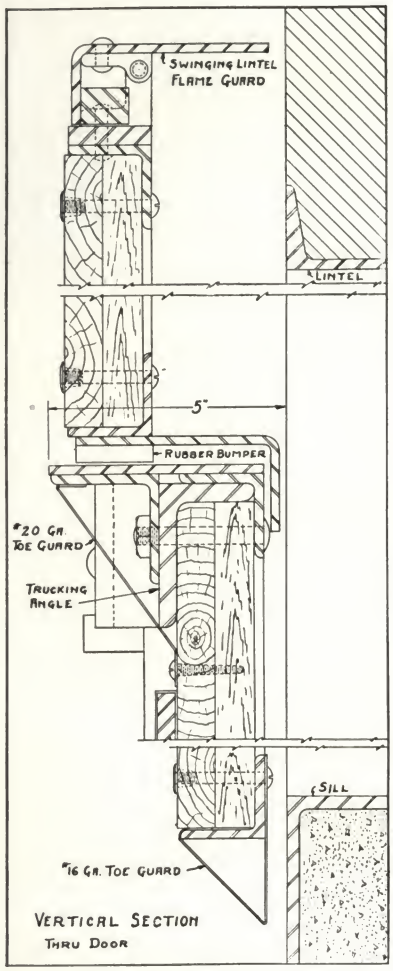
TYPES OF RICHMOND ELEVATOR DOORS

"REGULAR" TYPE DOORS

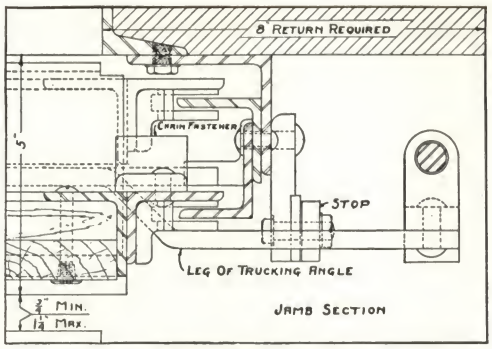
"Regular" Type Doors are required where there is sufficient space in the pit and between the floors. When the openings are substantially the same size the space required between openings equals one-half of the opening height plus 9 in. A clear return of 8 in. at each jamb is required. Minimum clearance car to building sill 4¼ in. Oversize doors 4½ in.



Jamb Section Regular Door



Vertical Section Pass Type Door



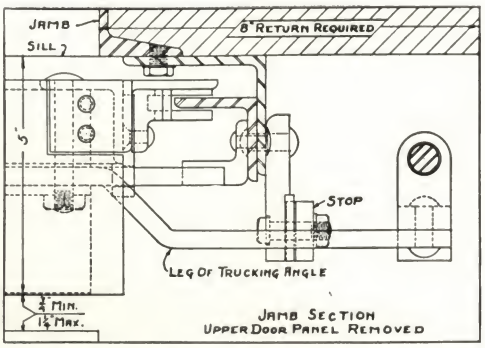
Jamb Section Pass Type Door

"PASS" TYPE DOORS

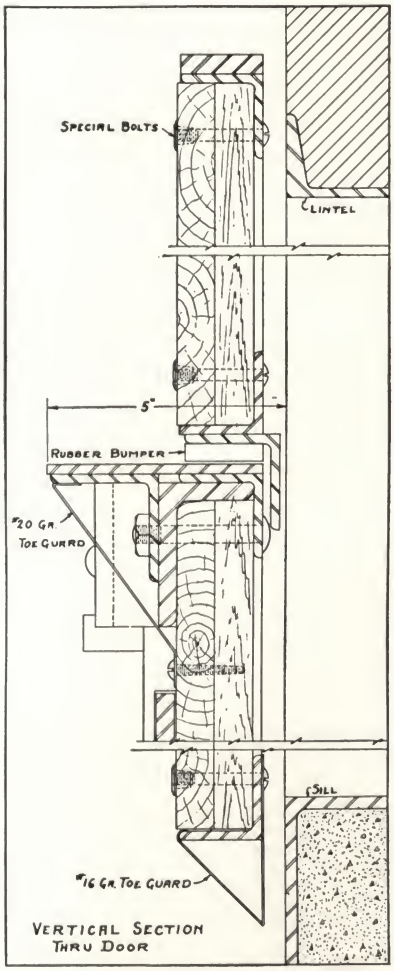
"Pass" Type Doors are required where the space between openings is less than that specified for "Regular" doors (but not less than 12 in.), and where openings of different height are in the same series. The upper door section is set into the shaft to slide by the lower section of the door above. The trucking sill is extended accordingly, a swinging lintel flame guard is provided on the top edge of the upper section, and the guides have double guide angles. Otherwise the construction is similar to that of "Regular" doors. A clear return of 8 in. is required at the jambs, minimum clearance car to building sill 5¾ in. for standard and "Oversize" doors.

"REGULAR TYPE DOORS WITH EXTENDED SILLS"

"Regular Type Doors with Extended Sills" are required at openings when the space between openings is sufficient for "Regular" doors but where "Pass Type" doors occur in the same vertical line or series. The construction is identical with "Regular" doors except for the trucking sill which is similar to that of a "Pass Type" door. Clearances required are the same as for "Regular" doors, except minimum clearance car to building sill is 5¾ in. as for "Pass Type" doors.



Jamb Section Regular Door with Extended Sill



Vertical Section Regular Door with Extended Sill

TRADE Fyrgard MARK
THE RICHMOND FIREPROOF DOOR CO.
RICHMOND, IND.
THE RICHMOND FIREPROOF DOOR COMPANY

CONSTRUCTION OF RICHMOND COUNTERBALANCED DOORS

The paneling designs of our doors are divided into the four general styles shown on this page. In all other respects, the construction of all styles is identical. All may be labeled.

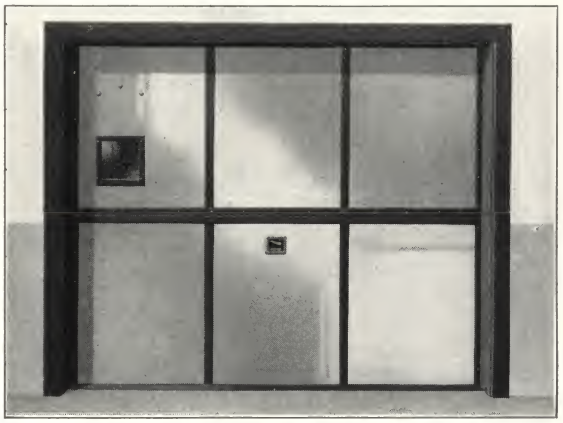
When vision panels are not desired, they are designated as C-1, C-2, C-3, and C-4 respectively.

When a door is labeled, the vision panel size is limited to 100 sq. in. exposed glass area. If two vision panels are desired, their combined glass area may not exceed 100 sq. in. Vision panels protected with fusible link drop shutters may be provided and exposed glass area increased to 144 sq. in.

CV-1

KALAMEIN COUNTERBALANCED DOOR (CV-1)

This style, because of the depressed moulded-in panels, when grained and enameled blends in beautifully with other finishings in corridors or rooms of fine office buildings and apartments. The hatch side may be tin clad, or metal clad similar to CV-2. This style presents the finest appearance possible, in counterbalanced doors. Unless otherwise specified, both sides are covered with 24-gauge galvanized steel. Standard finish—Gray metallic primer.



CV-2

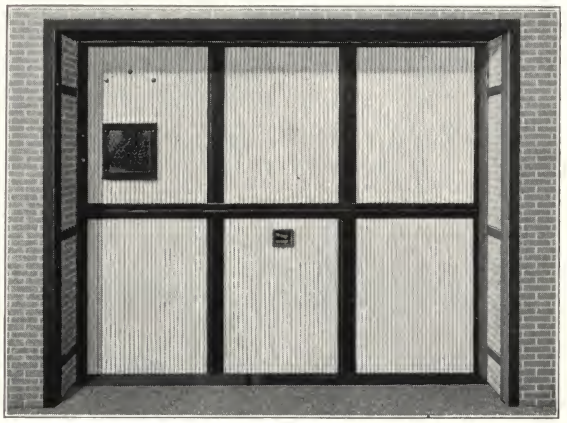
METAL CLAD COUNTERBALANCED DOOR (CV-2)

Where service as well as good appearince is required this style is suggested. It is more in demand than any of the others. The 2-ply core is covered on both sides with 24-gauge galvanized steel and the seams are locked with cap strips which provide a paneled appearance. If desired the cap strips may be inverted, and the seams soldered and scraped to present a smooth, flush surface. Standard finish—Gray metallic primer.

CV-3

TIN CLAD COUNTERBALANCED DOOR (CV-3)

A very serviceable construction suitable for factories and warehouses where appearance is not of importance. The 2-ply core is covered on both sides with standard fire door terne plate. Standard finish—All steel black, panel unpainted.



CV-4

CORRUGATED IRON COUNTERBALANCED DOOR (CV-4)

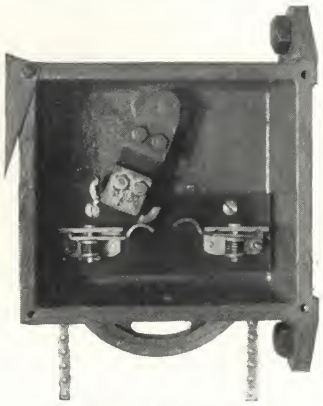
In situations where the doors are subjected to dampness that might cause rapid deterioration of doors with wood cores, corrugated iron doors are recommended. If periodically painted they will last indefinitely. We are equipped to cadmium plate these doors after fabrication where severe conditions warrant the expense. Standard finish—Red oxide primer.

RICHMOND UNDERWRITERS' LABELED "C," "CF" AND "D" INTERLOCKS

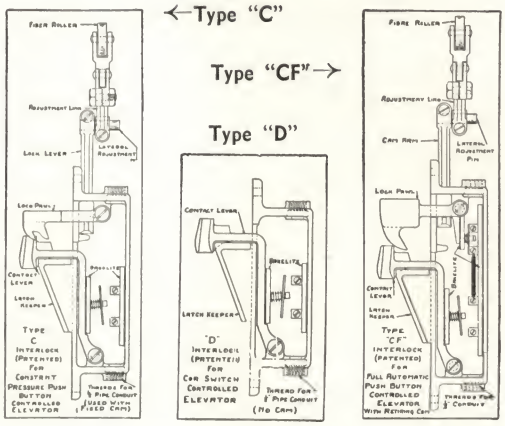
Richmond counterbalanced doors equipped with Richmond Underwriters' labeled interlocks provide maximum protection against accident and fire and secure the lowest possible insurance rates. They are designed for the three general types of elevator control, i. e.:

Type "C" for constant pressure double button elevators, Type "CF" for single button automatic elevators and Type "D" for car switch elevators.

In some door installations, (five or more doors in the same vertical line, or series) it is more economical to substitute a Richmond Master interlock, installed in the penthouse, which is connected by means of an oil tempered steel tape to all of the doors. Any door that is opened will operate the interlock and open the elevator control circuit. This unit is suitable for car switch controlled elevators and when equipped with cover gasket is explosion proof.



Master Interlock



RICHMOND ELECTRICALLY OPERATED ELEVATOR DOORS

DM Penthouse (Master) Type Operator

The Richmond Penthouse Master Operator is mounted on penthouse floor and is connected to the series of doors by means of steel operating rods and roller chain, retiring cams and friction grips, etc. Suitable interlocks connected in the elevator control circuit prevent movement of car while a door is open. Control may be push button or automatic.

DM Individual Type Door Operator

Richmond Individual Operators are mounted on the corridor side of the hatch wall above the openings. They are connected to their respective doors by means of arms or sprockets and chains. Direct arm connection is preferable where headroom is available. The sprocket-chain-slide bar arrangement is adaptable to low headroom.

All Richmond D-M Door Operators are Based on the D-M "Harmonic Motion" Principle, Slow Start-Fast Travel-Slow Stop. No Slamming.

STANDARD SPECIFICATIONS FOR "RICHMOND FYRGARD" LABELED COUNTERBALANCED DOORS

1. For all openings to freight elevator shafts, except as otherwise noted, furnish and install "Fyrgard" Counterbalanced doors manufactured by THE RICHMOND FIREPROOF DOOR COMPANY, of Richmond, Indiana.
2. Door paneling design to be Richmond Style—
   (a) Door panels to be covered with 24-gauge galvanized patent leveled steel, laid smooth and free from waves and buckles, upon white pine kiln dried core. Mouldings attached with concealed clips, corners mitred and welded.
   (b) Door panels to be covered with 24-gauge galvanized patent leveled steel, laid smooth and free from waves and buckles, upon white pine kiln dried core, with cap type vertical seams.
   (c) Door panels to be covered with Standard approved Fire Door Terne plate.
   (d) Door panels to be 18-gauge corrugated steel securely riveted to frame structure and reinforced with channel stays.
   (e) Standard 10x10-in. approved vision panels glazed with ¼-in. clear wire glass to be located adjacent to car control.
3. Door trucking sills to sustain a maximum load of —— pounds, to rest upon rigid adjustable stops riveted to door guides.
4. Doors to be equipped with malleable antifriction milled groove guide shoes, to be hung upon ⅝-in. chain rods, and No. 6 cable chain running over 5-in. ball bearing machined malleable sheaves, and to operate in heavy structural angle guide rails, securely attached to shaft wall and opening frames.
5. (a) Doors to be provided with web strap closers for manual operation and equipped with [electro-mechanical interlocks] [Master interlocks] in accordance with car control. Interlocks shall be wired by [Door Contractor] [Elevator Contractor].
   (b) Doors to be equipped with DM Individual electric operators and interlocks arranged for [Push Button] [Automatic] control.
   (c) Doors to be equipped with (a) Penthouse Master Operator(s) and accessories complete arranged for [Push Button] [Automatic] control.
   (d) Doors to be arranged for prompt, easy manual operation in case of power failure.
   (e) Power operated doors shall be completely wired by door contractor.
6. All material shall receive a prime coat of metallic primer at factory.
7. Door contractor to have free uninterrupted use of running elevator during installation of material.
8. Unless otherwise noted, all opening frames, lintels, and sills to be furnished and installed by others.
9. All material to be guaranteed by THE RICHMOND FIREPROOF DOOR COMPANY against defective material and workmanship for a period of two years from date of installation.

RICHMOND DOOR FEATURES

First Quality material, accurately manufactured. Superior workmanship. Long satisfactory service. Underwriters' and Factory Mutuals Label Service.

RICHMOND COUNTERBALANCED DUMBWAITER DOORS

Aluminum—Kalamein—Stainless Steel—Steel Plate

GENERAL

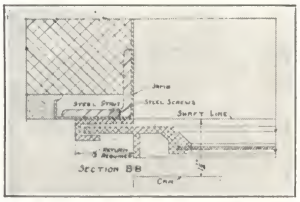
All Richmond Counterbalanced Dumbwaiter Doors are complete units ready to set in place and walled in (unless otherwise specified). Each unit consists of the door panels (with vision panel if specified), the, and finished opening frame (with or without shelf) and steel struts, and are manufactured in any of the following materials. Suitable interlocks furnished when specified.

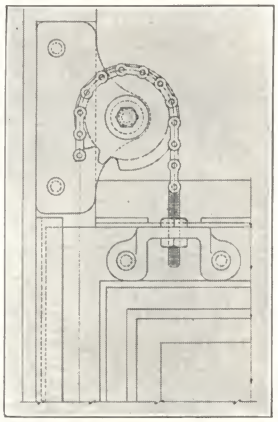
ALUMINUM DOORS composed of extruded guides and panel frame members with 14-gauge sheet panels and opening finished frames, mounted upon steel angle struts. They are very light, quiet in operation, and of pleasing appearance.

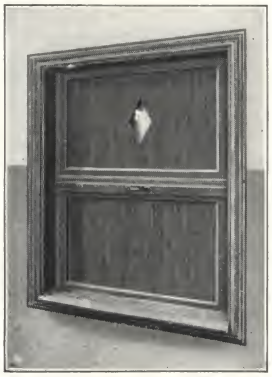
KALAMEIN DOORS with pressed or rolled steel opening frames are very pleasing in appearance (especially when finished in wood grain), are quiet in operation, and durable. Panels may be standard kalamein or thin "DWARF DOOR" construction.

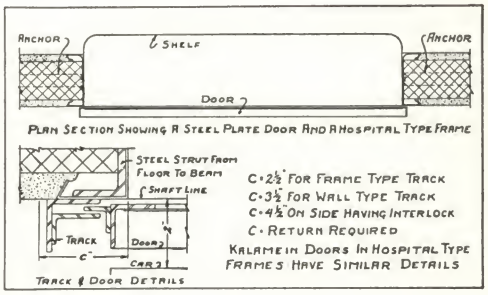
STAINLESS STEEL DOORS are very durable and pleasing in appearance. Manufactured in kalamein, or plate and angle similar to steel plate door construction. Used extensively where surrounding finish is stainless steel.

STEEL PLATE DOORS with pressed or rolled steel opening frames are durable, light, and suitable for situations where fine appearance is not so important. They are the most popular type, and are low in cost.









SPECIFICATIONS

1. For all openings to dumb-waiter shafts, except as otherwise noted, furnish (and install) "Fyrgard" (Aluminum) (Kalamein-"Standard" or "Dwarf Door") (Stainless Steel) (Steel Plate). COUNTERBALANCED DUMBWAITER DOORS, manufactured by THE RICHMOND FIREPROOF DOOR COMPANY of Richmond, Indiana.

2. Doors to hang upon ball bearing (sprockets) (sheaves) with suitable flexible chain and to operate in substantial guides.

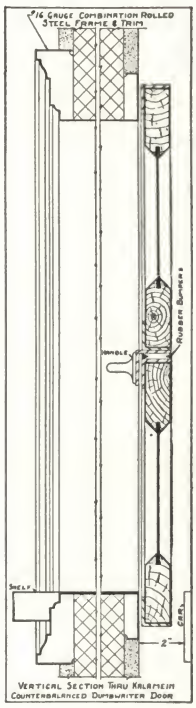
3. Opening frames to be (rolled) (pressed) metal with (without) shelf attached, mounted upon structural steel struts extending from floor to beam above.

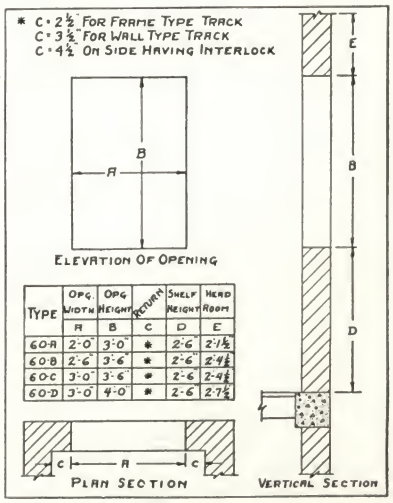
4. Doors to have (circular) (square) (diamond) vision panels glazed with ¼-in. clear wire glass.

5. Doors to be equipped with suitable interlocks to prevent operation of car until all doors are closed.

6. Doors to be finished in (natural or brushed aluminum) (wood grained per sample) (baked enamel color per sample) (gray metallic prime coat) at factory.

7. Units to be assembled complete ready for installation and guaranteed by the manufacturer against defective material and workmanship for a period of two years.



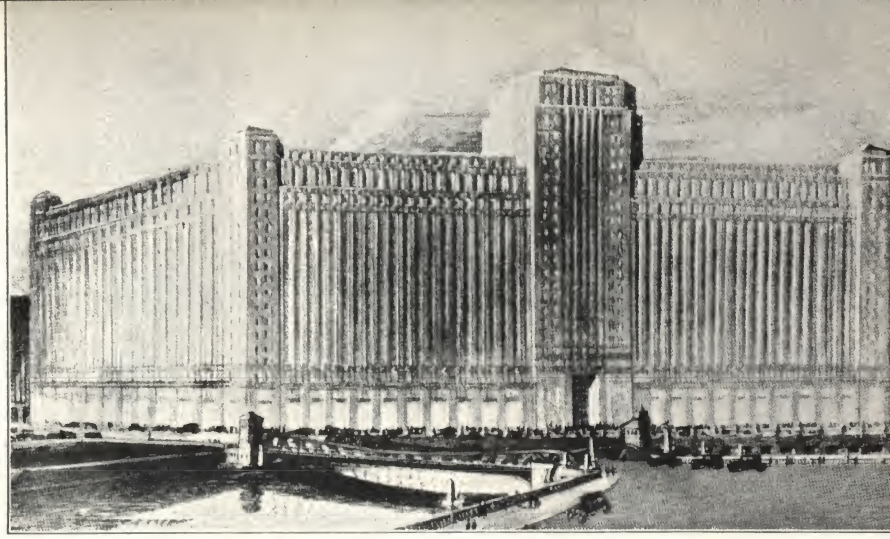


Type	Opg. Width A	Opg. Height B	Return C	Shelf Height D	Head Room E
60-A	2'-0"	3'-0"	*	2'-6"	2'-1½"
60-B	2'-6"	3'-6"	*	2'-6"	2'-4½"
60-C	3'-0"	3'-6"	*	2'-6"	2'-4½"
60-D	3'-0"	4'-0"	*	2'-6"	2'-7½"

TRADE Fyrgard MARK
THE RICHMOND FIREPROOF DOOR CO
RICHMOND, IND.

RICHMOND FIRE-RESISTING DOORS

Three Hundred Sixty Two Underwriters' Labeled "Fyrgard" Tinclad doors are installed in the Merchandise Mart Building, dividing it into numerous fire sections and providing adequate protection against the spread of fire from one section to another.



Merchandise Mart, Chicago, Ill.
The World's Largest Building

SPECIFICATIONS

TINCLAD DOORS

Core: Well seasoned white pine, fir, or spruce, tongue and grooved, dressed both sides to $\frac{25}{32}$-in. two or three-ply as indicated by the plans, assembled with standard cut iron nails.

Covering: Standard I. C. 20 pound fire door terne plate laid flat to core. All seams locked. All in accordance with Underwriters' Standards.

Doors to be manufactured by THE RICHMOND FIREPROOF DOOR COMPANY of Richmond, Indiana, and bear the Underwriters' label.

CORRUGATED STEEL DOORS

Door Panel Frame: to be 2½x2x$\frac{3}{16}$-in. angle mitre notched, bent, and welded.

Panel: to be layers of 24-gauge galvanized corrugated steel laid with corrugations of one layer at right angles with those of the other with a $\frac{1}{16}$-in. thick layer of sheet asbestos between. Panels to be riveted to frame. Sliding doors to be provided with track binder angle.

Doors to be manufactured by THE RICHMOND FIREPROOF DOOR COMPANY of Richmond, Indiana, and bear the Underwriters' label.

THE WHY OF OUR SPECIFICATIONS

TIN CLAD DOORS

Wood Cores

From the numerous non-resinous woods approved by the Underwriters, white pine, fir, and spruce have been selected for Richmond Doors because of their light weight and strength. They have less defects, do not warp readily, and are easily worked.

Core Nails

Standard cut wrought iron clinch nails are used to assemble cores. Nails of this type last indefinitely.

Tin Covering

Standard I. C. 20-lb. Fire Door terne plate sheets, joined with lock seams, attached to the core with barbed nails and are so applied that a minimum of air space surrounds the core inside of the metal. The exclusion of oxygen from the core prevents combustion. When the door is exposed to fire the core is slowly charred and presents a high degree of resistance to heat.

Vent Holes

A vent hole is cut in the center sheet on the exposed side of the door to permit the gases from the charring core to escape. If this is not done, the pressure will rupture the metal and allow the fire to rapidly consume the core.

CORRUGATED STEEL DOORS

Panel Frame

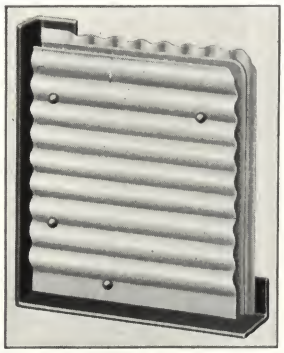
The 2½x2x$\frac{3}{16}$-in. continuous angle frame formed by the mitre notched, bent, and welded process provides a frame of great rigidity and ample strength for the largest door of this type.

Corrugated Steel Panels

Into the angle panel frame is riveted a panel composed of two layers of 24-gauge galvanized corrugated sheet steel separated by a $\frac{1}{16}$-in. thick sheet of asbestos. The corrugations of the layer in contact with the angle frame are vertical and those of the other layer are horizontal.

Two Section Spliced Door

For convenience in shipping or other cause it may be necessary to build doors in two sections to be assembled in the field. When the sections are bolted together and reinforcing bars attached, such doors are accepted as the equivalent of single section doors.



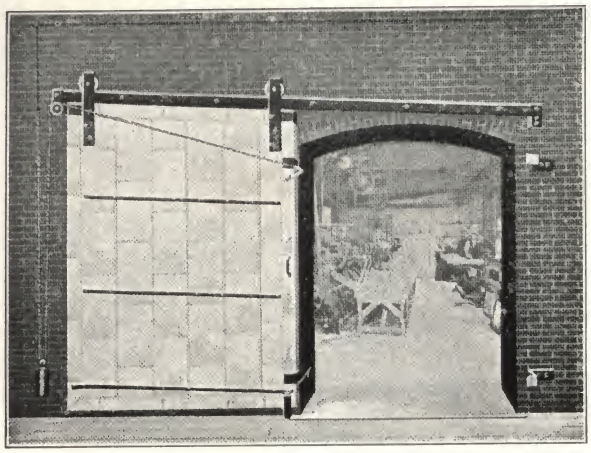
Binders

Track binders and rear binders, integral parts of sliding doors, are supplied irrespective of other hardware.

Richmond "Fyrgard" Tin Clad and Corrugated Steel swinging or sliding Fire Doors when hung upon Richmond approved hardware provide the greatest possible protection against the spread of fire, and are manufactured in strict accordance with the specifications of the Underwriters' Laboratories and Factory Mutuals Laboratories.

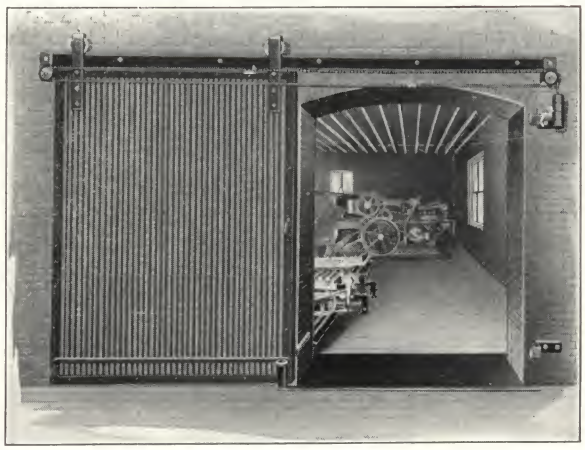
Four popular types of fire doors shown on page 11.

TYPES OF RICHMOND AUTOMATIC SLIDING AND SWINGING FIRE-RETARDING DOORS



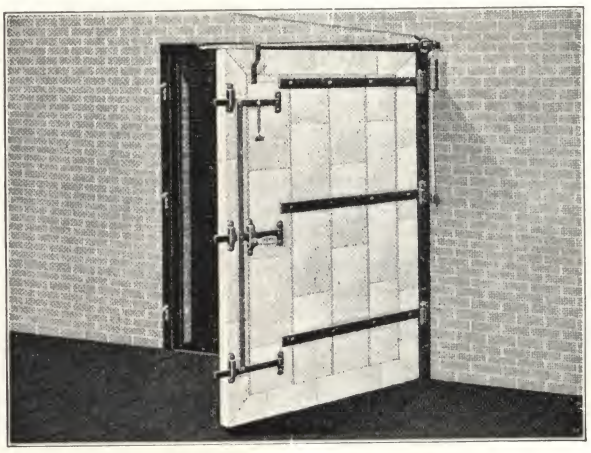
No. 200A Door and Hardware

No. 200A Door—tin clad.
No. 400A Corrugated door similar standard incline track types.
Universally used where ample headroom and returns are available. Simple to install and operate



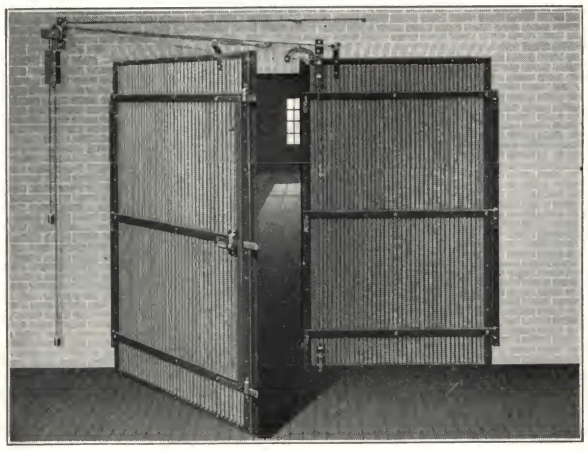
No. 405 Door and Hardware

No. 405 Corrugated door.
No. 205 Tin clad door similar standard level track types.
Used where limited headroom will not permit use of No. 200A or 400A. Numbers 406 and 206 with closing and counterweights furnished where No. 405 and No. 205 are not approved



No. 125 Door and Hardware

No. 125 Tin clad flush door.
This door in a channel frame or lap type is standard and is recommended where conditions will permit. Also furnished in corrugated steel



No. 335 Doors and Hardware

No. 335 Corrugated door.
Suitable for many situations where single swing doors cannot be used. May be lap type or flush in channel frame. Also furnished in tin clad

STANDARD HEADROOM REQUIREMENTS

Sliding Doors Nos. 205, 405—14 in. Nos. 200A and 400A Inclined Track, per following schedule.

Width of opening	Req. head-room	Width of opening	Req. head-room	Width of opening	Req. head-room
2′ 0″	17¾″	6′ 0″	23¾″	10′ 0″	29¾″
2′ 4″	18¼″	6′ 4″	24¼″	10′ 4″	30¼″
2′ 8″	18¾″	6′ 8″	24¾″	10′ 8″	30¾″
3′ 0″	19¼″	7′ 0″	25¼″	11′ 0″	31¼″
3′ 4″	19¾″	7′ 4″	25¾″	11′ 4″	31¾″
3′ 8″	20¼″	7′ 8″	26¼″	11′ 8″	32¼″
4′ 0″	20¾″	8′ 0″	26¾″	12′ 0″	32¾″
4′ 4″	21¼″	8′ 4″	27¼″	12′ 4″	33¼″
4′ 8″	21¾″	8′ 8″	27¾″	12′ 8″	33¾″
5′ 0″	22¼″	9′ 0″	28¼″	13′ 0″	34¼″
5′ 4″	22¾″	9′ 4″	28¾″	13′ 4″	34¾″
5′ 8″	23¼″	9′ 8″	29¼″	13′ 8″	35¼″

Swinging Doors Nos. 125, 135, 325, 335. Lap Type, 8 in. Flush Type, 4 in.

STANDARD RETURNS REQUIRED

Sliding Doors Nos. 200A, 400A, 205, 405.

Return at opening jamb (past which door slides when opened.) Opening width plus 16 in. Return at closing jamb, 14 in.

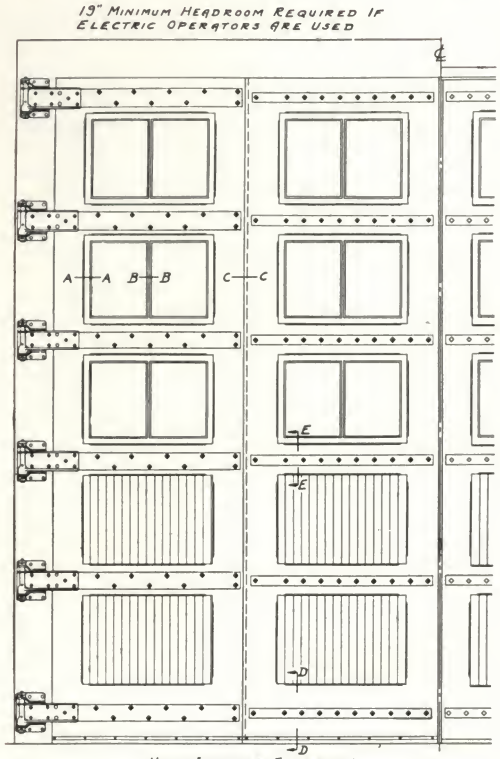
Swinging Doors Nos. 125, 325, 135, 335.

Lap Type—6 in. at each jamb plus 6 in. at one jamb for Automatic Closing device.

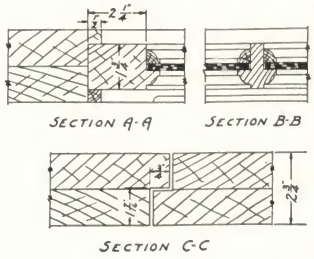
Flush Type—width of frame flange only. 6¾ in. required at one jamb for Automatic Closing device.

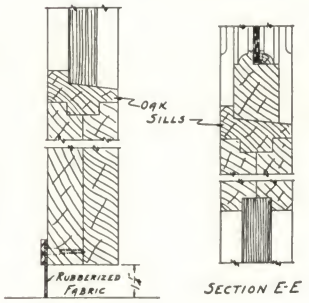
If conditions are not Standard consult Home Office or nearest Richmond Branch Office or Representative.

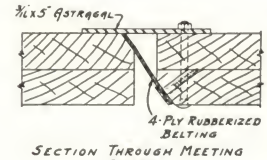
RICHMOND SWING-FOLD DOORS • • •



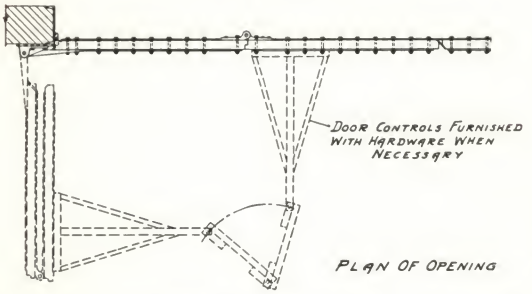
HALF INTERIOR ELEVATION



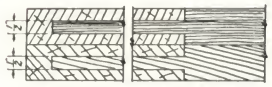




SECTION THROUGH MEETING STILES

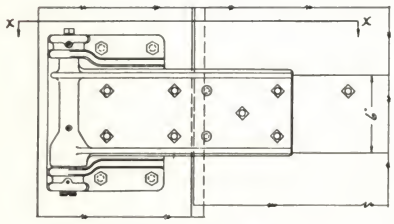


PLAN OF OPENING

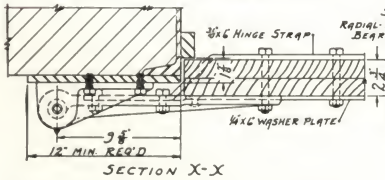


SECTION SHOWING MORTISE AND TENON JOINT BETWEEN RAILS AND STILES

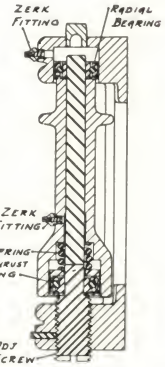
NOTE
DOORS ARE MADE OF 2 PLY WHITE PINE BLIND SCREWED AND GLUED TOGETHER



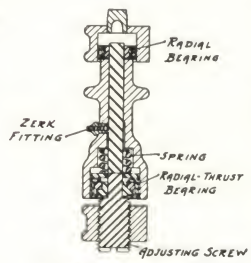
ELEVATION SHOWING JAMB HINGE



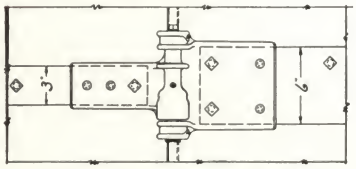
SECTION X-X



VERTICAL SECTION THROUGH JAMB HINGE



VERTICAL SECTION THROUGH CENTER HINGE



ELEVATION SHOWING CENTER HINGE

RICHMOND Swing-Fold Industrial Doors equipped with heavy malleable iron and steel, full ball bearing, weatherproof hinges and electric operators are ideal for closing large openings up to approximately 34x22 ft. for doors in pairs (4 sections) and 17x22 ft. for single doors (2 sections).

The doors are trussed to prevent warpage and distortion. The travel of the doors is governed by "wind balances" (door controls) and the operator arms and connections. Even the largest doors can be easily opened or closed by hand, when the operator is disconnected.

SPECIFICATIONS

(Heavy Doors and Hardware)

DOOR SECTIONS

Stiles and Rails—2¾ in. thick 2-Ply White Pine or Sitka Spruce glued and blind screwed together. Joints between members are double mortise and tenon. The bottom edges of panel and sash openings are lined with oak watersheds.

Panels—1⅛ in. thick tongue and groove, "V" grooved White Pine or Fir ceiling.

Sash—White Pine, moulded into openings, muntin bars machined from solid stock with loose glass mould to match.

Design—Any combination of panels and sashes may be furnished.

HARDWARE

Hinges—Are malleable iron and steel, full ball bearing, spring cushioned with vertical screw adjustment, grease gun lubricated and are weatherproof.

Jamb Hinges—The female leaf is attached to the jamb with four bolts or cap screws. To the male leaf are attached two 6-in. steel straps that extend across on each side of and are through bolted to the jamb door section.

Center Hinges—To the strap on the exterior side is attached the center hinge female leaf. To the male leaf is attached a 3-in. steel strap that extends across and is through bolted to the suspended door section, with a companion strap on the interior side of door.

Astragals—Rubberized fabric and 5-in. wide strap steel supplied for all doors in pairs (4 sections).

TRUSSES

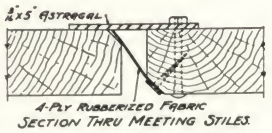
To prevent warpage and distortion of the jamb door section, I-Beam diagonal trusses are provided (not shown on cut) with such additional reinforcing as may be required. These are mounted upon the steel hinge straps to prevent the bolts drawing into the wood.

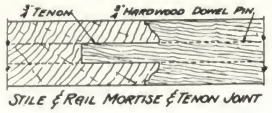
ELECTRIC OPERATORS

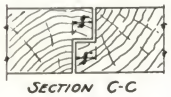
See pages 13 and 15.

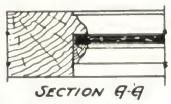
• • • HARDWARE AND OPERATORS

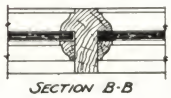
RICHMOND Swing-Fold Medium Size Doors and hardware are suitable for openings up to 24x18-ft. doors in pairs (4 sections) and 12x18 ft. for single doors (2 sections). These doors may be manually operated satisfactorily but power operation is recommended. In the latter case the movement is governed by radius rods and the operator arms and connections. Wind balances similar to those supplied with heavy doors may be substituted for radius rods when specified.

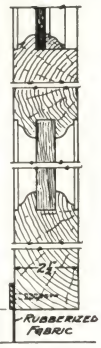


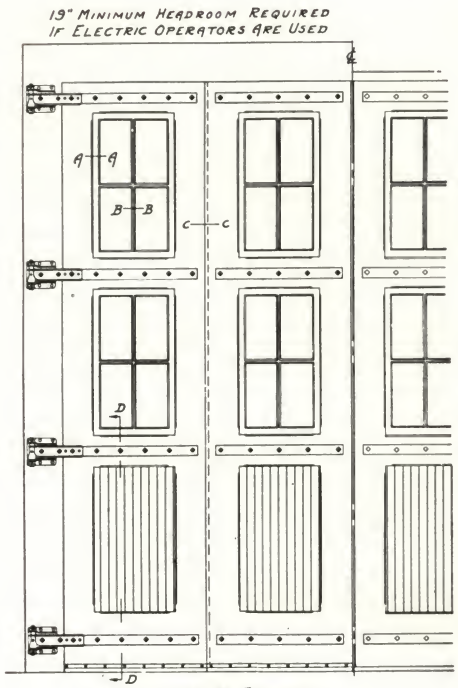












SPECIFICATIONS

(Medium Doors and Hardware)

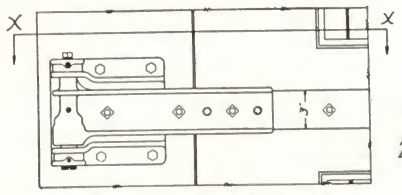
DOOR SECTIONS

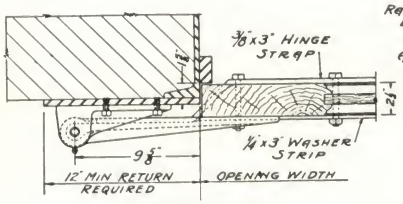
Stiles and Rails—2½-in. thick solid White Pine or Sitka Spruce machined with integral mouldings. Joints between members are mortise and tenon reinforced with hard wood dowels.

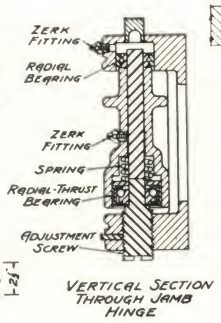
Panels—¾-in. thick tongue and groove—"V" grooved fir ceiling set in grooves in stiles and rails.

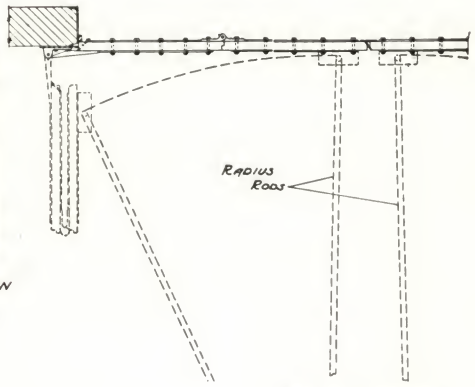
Sash—Glass openings formed by integral moulding in the stiles, rails, mullions, and muntin bars with loose glass stop mouldings to match.

Design—Any combination of panels and glass openings.









HARDWARE

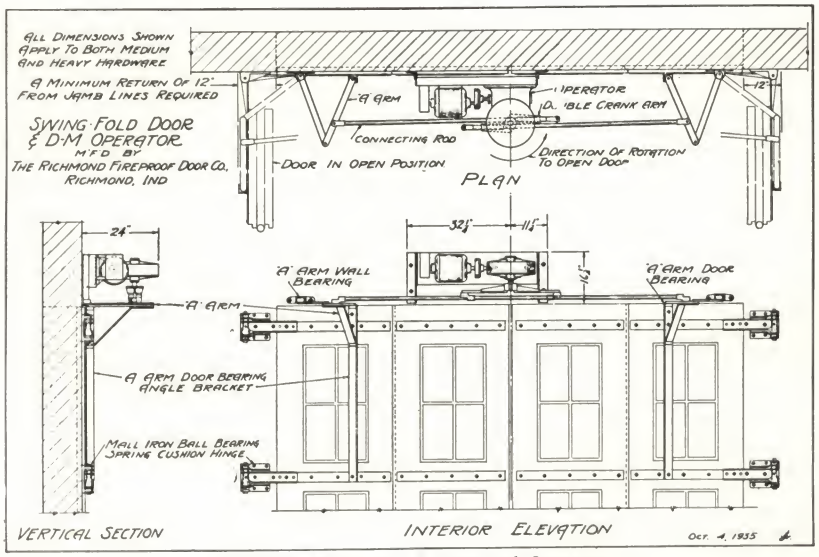
Hinges—Similar in all respects to heavy hardware (see opposite page), except that castings are smaller and steel straps are 3 in. instead of 6 in. in width. Application similar. When doors are to be manually operated, suitable chain and foot bolts and keepers are provided for locking door sections.

Trusses—Furnished on larger size doors in this class when required.

Astragals—Rubberized fabric and 5-in. wide strap steel supplied for all doors in pairs (4 sections).

ELECTRIC OPERATORS

See page 15 for description. Operators include all door arms, connecting arms, etc.



Clearance Diagram S-F Door and Operator

TRADE Fyrgard MARK
THE RICHMOND FIREPROOF DOOR CO
RICHMOND, IND.

RICHMOND IMPROVED BI-FOLD DOOR AND OPERATOR

Three Bi-Fold Doors Equipped with "DM" Electric Operators

The two largest openings are 14 ft. wide, 17 ft. 6 in. high and the smaller opening 12 ft. wide, 14 ft. high. The larger doors open or close in 17 seconds and the smaller in 14 seconds

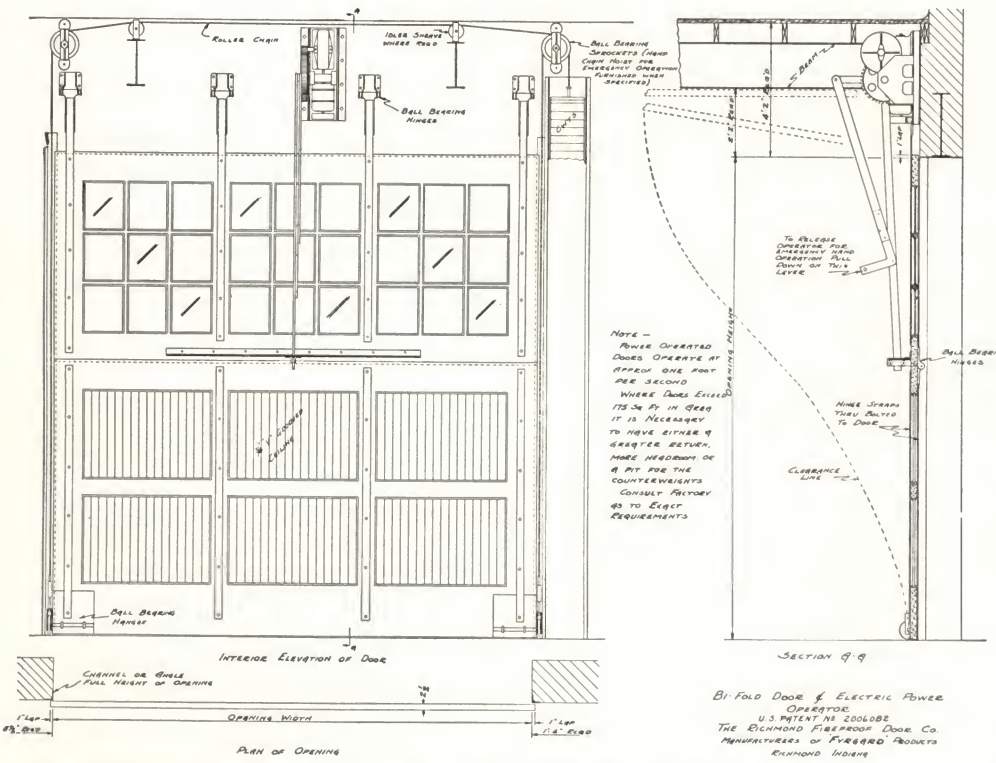
Close Up View of Bi-Fold Door and Door Arms

The middle arm is in two pieces with a ball and socket break joint to permit easy manual operation of door in case of power failure

BECAUSE of its simplicity and its massive, sturdy, two-section construction, Bi-Fold Industrial Doors have for many years been the favorite type for the closure of openings up to about 250 sq. ft., and they have successfully withstood the intense competition of the recently developed multi-section vertical sliding doors. However, not until Richmond improved the Bi-Fold Door, equipping it with full ball bearing hardware, roller chain and "DM" Electric Operator, did it really come into its own for openings up to 450 sq. ft.

By means of ball bearing hinges, rollers and sprockets, roller chain and correct alignment of moving parts, friction has been reduced to the minimum. When correctly counterbalanced even the largest door may be easily opened or closed by hand (in case of power failure) without a geared hoist.

Many attempts have been made to apply power operators to Bi-Fold doors, but Richmond has developed and patented the only successful positive and automatic method. The same movement of the operator arm that breaks the door from its closed position, if continued, also opens it to full height of opening. The reverse movement of the operator arm closes the door and holds it so tightly against the jambs that no additional catch or locking device is required.



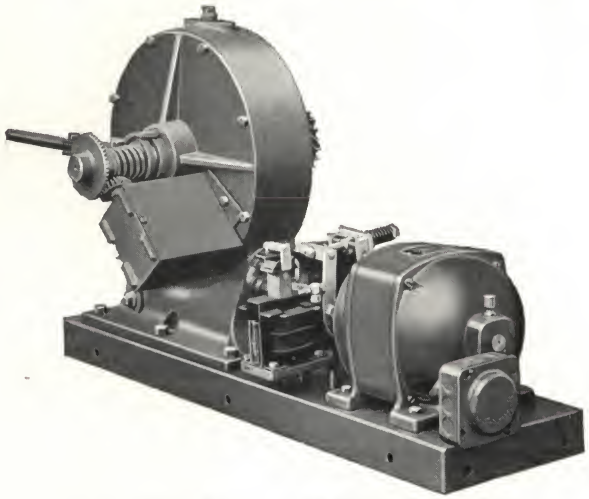
Many old installations of Bi-Fold Doors may be motorized by the Richmond "DM" Operator method with little or no changes in existing equipment, regardless of who manufactured them originally. If doors are large, they should be fitted with new ball bearing hardware.

Consult your nearest Richmond Agency or write Home Office for further details.

TRADE Fyrgard MARK
THE RICHMOND FIREPROOF DOOR CO.
RICHMOND, IND.
THE RICHMOND FIREPROOF DOOR COMPANY

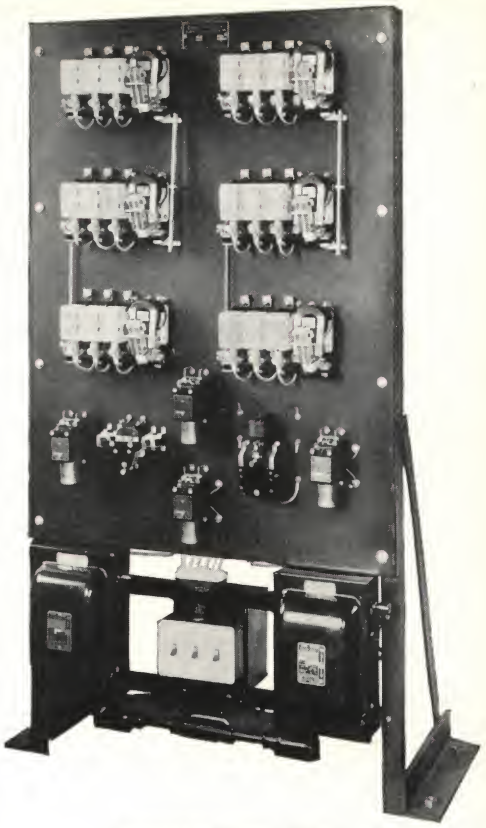
RICHMOND TYPE "DM" ELECTRIC OPERATORS

An Operator For Every Purpose



Medium Duty Operator with Clutch—Type "CC"

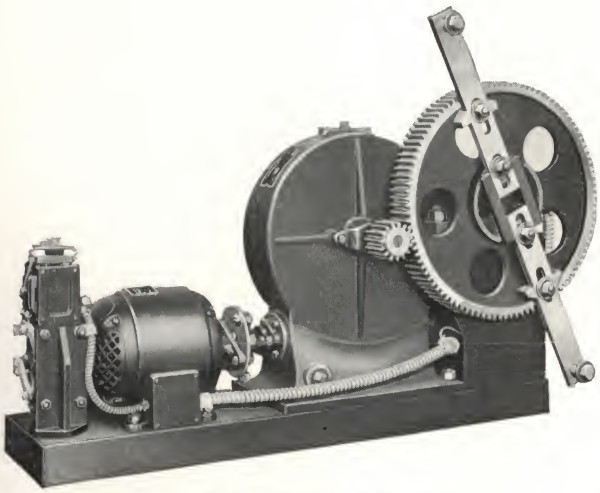
For vertical telescoping, vertical slide, slide, swing and counterbalanced doors



Penthouse Control Board

For counterbalanced elevator door master operator

RICHMOND "DM" Electric Operators are manufactured in several sizes and types. There are types for light, medium, and heavy duty. The light duty type is compact with motor, brake, and speed reducer assembled as an integral unit. The medium and heavy duty units are assembled, the motor, solanoid brake, speed reducer and spur gear (if used) being mounted on a heavy channel base. First grade standard motors and brakes are used. Flexible multi-disc fabric couplings connect the motor to the speed reducer. The speed reducer worm shaft runs in precision ball bearings. The worm gear shaft and spur gear shaft (when used) turn in heavy bronze bearings. The medium and heavy duty types may be mounted in any position, i.e., horizontal, vertical, or inverted. Adequate packing and stuffing boxes prevent leakage of oil from the worm gear case. Suitable positive easily adjusted limit switches are provided on all types as a part of the unit.



Heavy Duty Operator—Type "C-1"

For large swing-fold, Bi-Fold doors and other heavy equipment
Note: Operator without spur gear—Type "C"

Suitable control panel boards are supplied for every operator from the simplest up to the multiple type for master penthouse counterbalanced door operators. See illustration on this page.

In all applications of Richmond "DM" Operators (where conditions permit) the "Harmonic Motion" principle is employed, whereby the door is started slowly, travels fast, and comes to a slow stop, with no slamming as it closes.

Richmond "DM" Operators are easily installed and trouble free. They are controlled by the "two-button" method (unless otherwise specified) and may be started, stopped, or reversed at will. Any desired number of push button stations may be provided.

Richmond "DM" Operators with suitable accessories are adaptable for the operation of the following types of door equipment.

(1) Freight Elevator Counterbalanced Doors.

(2) Freight Elevator Hatchway and Car Gates.

(3) Passenger Elevator Doors (Single and Multiple slide and center parting).

(4) Industrial-Swing (single and pairs) Swing-Fold, Bi-Fold, Vertical Telescoping, Vertical Slide and Horizontal Slide (single and pairs) Doors.

(5) Subway Ventilation Dampers.

Richmond "DM" Operators will open or close large Swing-Fold Doors in 6 to 8 seconds and Bi-Fold Doors at the rate of 1 ft. per second.

If you have a power operated door problem, consult your nearest Richmond Agency or write Home Office.

PARTIAL LIST OF BRANCH OFFICES

Agents and Representatives

A. C. Weigerding, P. O. Box 173, Albuquerque, N. Mex.
Strope Steel Co., Terminal Street, Albany, N. Y.
E. P. Hoffman, 212 Red Rock Building, Atlanta, Ga.
Wm. E. Gambrill & Co., 213 East Street, Baltimore, Md.
Babcock, Hinds & Underwood, 174 Washington Street, Binghamton, N. Y.
The Richmond Fireproof Door Co., 66 Western Avenue, Boston, Mass.
Shults Engineering Company, Morgan Building, Buffalo, N. Y.
D. P. Barrett Co., 320 Brown Marx Building, Birmingham, Ala.
Currin-Andrews, 821 East 11th Street, Chattanooga, Tenn.
Richmond Fireproof Door Co., 100 North LaSalle Street, Chicago, Ill.
Richmond Fireproof Door Co., 607 Caxton Building, Cleveland, Ohio
Durbrow & Otte, 206 West Court Street, Cincinnati, Ohio
Alvan Tallmadge, 63 Parkwood Avenue, Columbus, Ohio
Walcott, Maisey & Paige, 1815 Coombs Street, Dallas, Tex.
Cement Products Co., 715 East River Street, Davenport, Iowa
Colorado Builders Supply Co., 1534 Blake Street, Denver, Colo.
Des Moines Stair Co., 611 Polk Building, Des Moines, Iowa
Richmond Fireproof Door Co., 2211 Woodward Avenue, Detroit, Mich.
C. C. Gaines, 903 Mills Building, El Paso, Tex.
Chas. F. Williams Co., 3320 West 7th Street, Fort Worth, Tex.
J. H. Jones, 215 Standard Building, Fort Wayne, Ind.
Haven-Busch, 501 Front Avenue, N. W., Grand Rapids, Mich.
J. D. Wilkins, P. O. Box 1288, Greensboro, N. C.
Atherton Bowen, P. O. Box 853, Harrisburg, Pa.
Walcott, Maisey & Paige, 2911 Dalton Street, Houston, Tex.
Stackhouse Building Specialty Co., 6117 College Avenue, Indianapolis, Ind.
Eustis A. Lancaster, John Sevier Hotel Building, Johnson City, Tenn.
E. C. Marqua Co., 617 Fairfax Building, Kansas City, Mo.
Equipment and Supply Co., 420 Baxter Avenue, Louisville, Ky.
Kenneth C. Gaines, 1046 South Olive, Los Angeles, Calif.
Pidgeon-Thomas Iron Works, P. O. Box 954, Memphis, Tenn.
Richmond Fireproof Door Co., 720 North Jefferson Street, Milwaukee, Wis.
John Williams Co., 1207 Warner Building, Nashville, Tenn.
Yunker Metal Products Co., 17 Cypress Street, Newark, N. J.
Nachary Builders Supply Co., 318 Carondelet Street, New Orleans, La.
Richmond Fireproof Door Co., 1 East 42nd Street, New York, N. Y.
Hans Dumelin, 295 Sherman Avenue, New Haven, Conn.
Richmond Fireproof Door Co., 1901 Architects Building, Philadelphia, Pa.
James R. Pitcairn, Century Building, Pittsburgh, Pa.
J. S. Archer, 511 Atlantic Life Building, Richmond, Va.
A. L. Horwitz, 208 Boxley Building, Roanoke, Va.
E. W. Maurer, 704 Temple Building, Rochester, N. Y.
Manufacturers Specialty Co., Exchange Building, Salt Lake City, Utah
John A. Williamson Co., 804 Avenue A, San Antonio, Tex.
San Diego Building Specialty Co., 629 West G Street, San Diego, Calif.
Persons-Dwan Co., 516 Call Building, San Francisco, Calif.
LaBar & Evans, 711 Linden Street, Scranton, Pa.
Tourtellotte-Bradley, 401 White Building, Seattle, Wash.
Lasar Manufacturing Co., 16th and O'Fallon Streets, St. Louis, Mo.
Otto F. Bridge, 504 Jackson Street, Sioux City, Iowa
Builders Agency, 732 West Washington Avenue, South Bend, Ind.
B. R. Johnson, 145 Harding Place, Syracuse, N. Y.
Builders Engineering Co., 2694 University Avenue, St. Paul, Minn.
Stovall & Archer, 805 Peninsular Telephone Building, Tampa, Fla.
S. L. Everitt, 422 Machen Street, Toledo, Ohio

THE RICHMOND FIREPROOF DOOR COMPANY

RICHMOND, INDIANA

SECURITY FIRE DOOR CO.

Counterbalanced Truckable and Other Fireproof Freight Elevator Doors

3036-3048 Lambdin Avenue, ST. LOUIS, MO.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

"Seco" Metal Clad, Corrugated, Kalamein and Steel Plate Counterbalanced Freight Elevator Door.

"Sec-Tel" Metal Clad, Corrugated, and Kalamein Two-section Slide-up Freight Elevator Door.

"Horifold" Warehouse, Freight House, Shipping Platform and Garage Door.

"Vertel" Corrugated Warehouse, Freight House and Shipping Platform Two-section Slide-up Door.

"Uni-Motor" Electric Operators for Freight Elevator Doors and Car Gates.

"Seco" Electric Interlocks.

Dumbwaiter Doors.

Underwriters' Approval

All "Seco" and "Sec-Tel" freight elevator doors are inspected and labeled by the Underwriters' Laboratories, Inc., and the Factory Mutuals, when so desired, provided they are within the size limits that permit labeling: viz., 8 ft. wide by 10 ft. high.

The services of our Engineering Department, as well as those of our representatives in all the leading cities of the United States are at your disposal in solving door problems.

Write for Catalogue "D-2" covering our "Seco," "Sec-Tel" and Dumbwaiter Doors, or for Catalogue "C," giving complete information about our "Horifold" and "Vertel" Doors.

"Seco" Counterbalanced Freight Elevator Doors

"Seco" doors are of the *truckable* counterbalanced type, being made in two sections which slide in opposite directions on the shaft face of the wall. The sections evenly counterbalance without counterweights.

"Seco" doors can be furnished with metal clad, kalamein, corrugated steel or steel plate panels.

"Seco" doors are provided with heavy steel *angle trucking bars.* The *trucking bars* form the top edge of the lower section and are supported in *perfect alignment* with the opening or floor sill when the door is in the open position by means of heavy *angle trucking bar supports* at each end of the trucking bar.

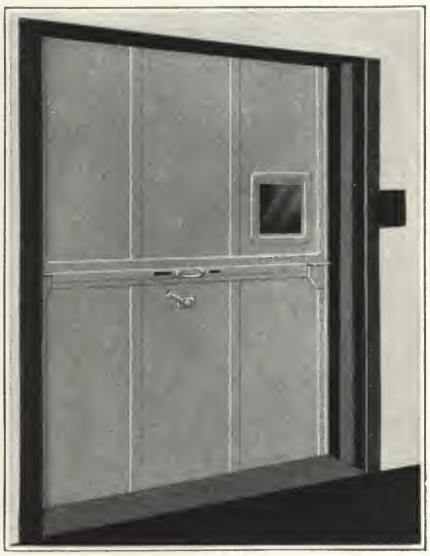
These sill or trucking bar supports rest on the solid opening sill and will remain in the same permanent position. The supports are designed to act as gusset plates in the upper corners of the lower section, reinforcing it and securely joining the section frame to the trucking bar.

"Seco" doors are hung with heavy adjustable chain rods and cable chains operating over large double race ball bearing sheaves. No safety gates are required when "Seco" doors are used.

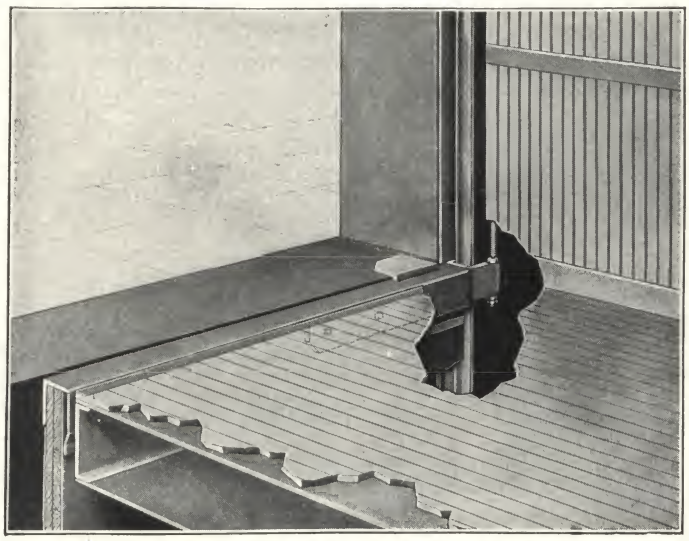
Metal Clad Panels—These are constructed of two thicknesses of White Pine, covered on both sides with flat galvanized steel sheets, and securely bolted into heavy angle frames.

Kalamein Panels—These doors are constructed of White Pine cores, paneled on the room side, flush on the shaft side. Room side of panels is covered with smooth kalamein iron, and has drawn steel mouldings around panels fastened in place so that no nail or screw heads show.

The shaft side of doors is covered with flat galvanized



Room Side of Type M-6 "Seco" Door
Arranged for room side operation in connection with double button elevator



"Seco" Door with "Stay-set" Trucking Bar Support
Note that trucking load is supported by opening sill

steel sheets. All seams between stiles and rails are clipped, filled with solder and ground smooth.

Corrugated Steel Panels—These doors are made of corrugated steel sheets riveted into angle frames forming door sections, and are stiffened vertically with flat steel reinforcing bars.

Adjustable Shoes (Patented)—"Seco" doors are equipped with patented adjustable shoes. These eliminate friction and permit adjustment to reduce side play between the doors and guides caused by wear and spreading of guides.

"Seco" Door Interlocks (Patented)

"Seco" doors when equipped with Security patented electric interlocks provide maximum protection against fire and accident.

Security electric interlocks are especially designed for vertically sliding doors and have been approved by the Underwriters and various State and municipal departments, assuring low casualty insurance rates.

Specify Type "C" or Type "D" interlocks for car switch controlled elevators, Type "DL" interlocks for push button or double button operated elevators.

Send for a copy of Catalogue "D2."

"Seco Uni-Motor" Electric Operators

A single unit applies power equally at both sides of the door. A motor of ample size is assembled compactly with its gears and sprockets.

Should the door meet an obstruction while opening or closing, the motor will stall without injury to the apparatus. It is guaranteed to withstand stalling, at full voltage, without injury for short periods.

The doors and gates can be operated manually as easily as if the power drive were not attached. Car gates can be equipped with similar operators so the gate will be raised as quickly as the door is opened.

The cross-drive is covered to protect it against dirt. All gears are enclosed. Ball bearings are arranged for pressure gun lubrication.

Failure of one unit will not affect the others. A motor can be removed for inspection or replacement without blocking up the door.

Only normal shaft space is needed, see drawing below. Operators can be applied to old elevator doors. If space is limited, the cross-drive, and even the drive unit, can be placed on the roomside, being entirely enclosed and not interfering with the space around the opening.

The motor has capacity to operate all sizes of doors at less than ½ second per foot of opening height.

Specially designed zone switches, with electro-mechanical interlocks, actuated by a cam on the car, prevent operation of the elevator unless all the doors are closed and latched.

Rugged, door operating buttons are placed near the car control. The "open" button requires momentary pressure; the "close" button requires constant pressure. An emergency "stop" button will stop all door movement. With leveling type elevators, the doors may be opened automatically as the car stops at the floors. The doors may be closed by the car switch if desired. Doors and the car gate, when used, are operated by the same buttons.

Motors are available for 208 or 220 volts, 2 or 3-phase, alternating or 230 volts direct current, power. No motor-generator set is required.

"Seco" Door and "Uni-Motor" Specifications

For all openings to freight elevator shaft, except as noted, furnish and install metal clad "Seco" Doors as manufactured by the SECURITY FIRE DOOR CO., St. Louis, Mo. Door panels to be Type M-6, covered with flat galvanized steel sheets [or kalamein paneled] as shown on plans.

Furnish trucking bars to sustain a load of .... pounds and designed to transfer trucking load to opening sill.

Doors to be provided with adjustable shoes and are to be hung on ⅝-in. adjustable rods and heavy Security steel chains operating over 5-in. double race ball bearing sheaves. Doors to work in heavy angle guides securely fastened to opening frames and walls.

Doors shall be provided with web straps for manual opening and closing. Doors shall be equipped with electro-mechanical interlocks, with the necessary wiring for same. In lower corner of upper door provide 8x10-in. glass vision panel.

Where indicated on the plans, furnish and install "Seco Uni-Motor" electric door and car gate operators, complete with all necessary wiring, limit switches, operating buttons and master control.

The door movement shall be retarded near the end of travel, in both directions, to prevent slam or jar.

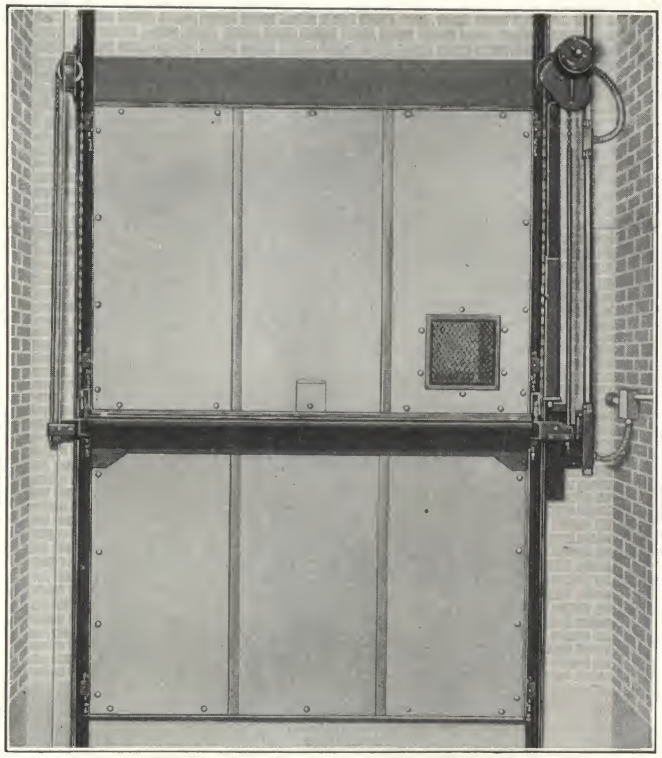
The operating equipment shall permit easy manual operation of doors and car gates in case of power failure without the use of any clutch or special releasing mechanism.

All to receive priming coat of paint at shop.

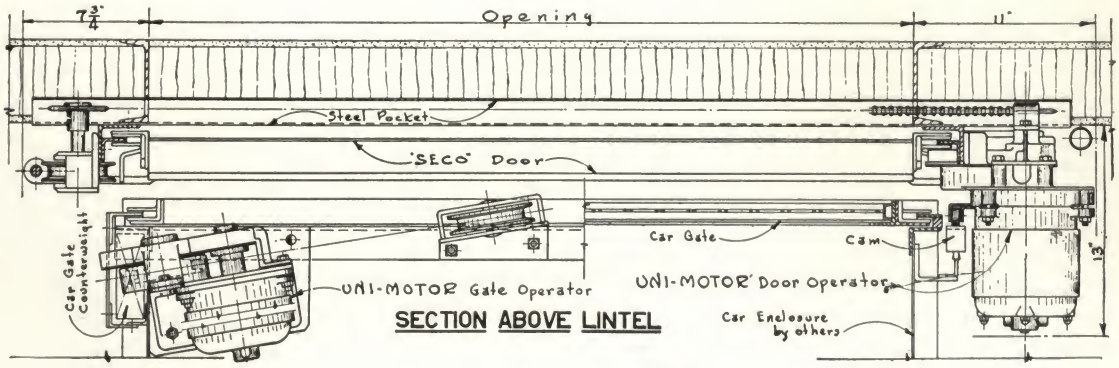
Door contractor to have the free and uninterrupted use of the running elevator when installing the doors.

All to be guaranteed against defects in material and workmanship for two years.

Steel frames and sills to be furnished under Miscellaneous Iron Work. Power line to penthouse with fused switch, by others.



Shaft View of "Seco" Door and "Uni-Motor" Operator



Plan View Giving Space Requirements for "Uni-Motor" Installation Shown at Left

Space Requirements for "Seco" Doors

Schedule below should be consulted in order to determine highest opening obtainable in certain story heights for Regular and Pass Type "Seco" doors.

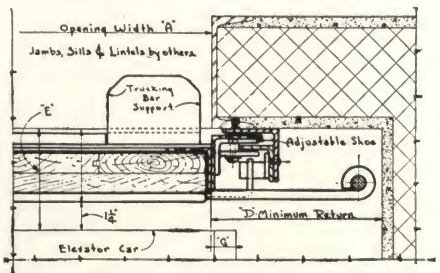
Also note other space requirements.

SCHEDULE OF MAXIMUM OPENING HEIGHTS "SECO" DOORS

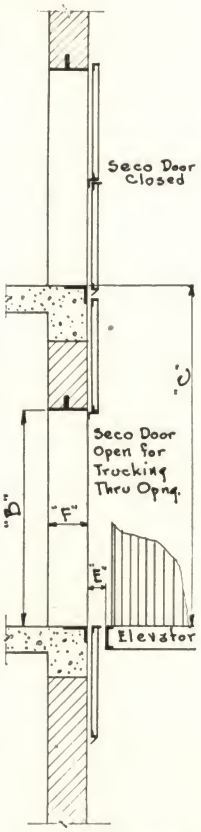
For Various Floor Heights

Opening height "B" ft.	Opening height "B" in.	Minimum "C" for regular type ft.	Minimum "C" for regular type in.	Minimum "C" for pass type ft.	Minimum "C" for pass type in.
6	0	9	6	7	6
6	6	10	3	8	0
6	8	10	6	8	2
6	10	10	9	8	4
7	0	11	0	8	6
7	6	11	9	9	0
8	0	12	6	9	6
8	6	13	3	10	0
9	0	14	0	10	6
9	6	14	9	11	0
10	0	15	6	11	6

Note: Minimum "C" for Regular Type doors can be slightly decreased in special cases. Consult factory.



Plan of Shaft at Jamb—Regular Type "Seco" Door



Section Through Opening Showing Regular Type "Seco" Door

CLEARANCE REQUIRED FOR "SECO" DOORS

Type	D, in.	E, in.
Regular type	7½	*4½
Pass type	8	6½

*Minimum.

Note: For wide openings or for heavy trucking loads, Regular type doors, both metal clad and corrugated, may require 5 or 5½ in. for clearance E.

"Seco" Steel Plate Dumbwaiter Door with Glass Vision Panel Showing Flush Steel Trim

Dumbwaiter Doors

"Seco" dumbwaiter doors have insulated steel panels when of Underwriters' labeled construction. When not labeled, the panels are 16-gauge steel plate, securely fastened to angle frames.

The panels are fastened in channel or angle frames. The doors slide easily in steel guides and are hung on steel cable chains operating over double race ball bearing sheaves. No counterweights are required, each section of door balancing the other.

"Seco" doors are usually furnished with 16-gauge steel frames forming flush trim on roomside. These frames are reinforced with angles. See detail. Ornamental trim can be attached to flush trim if desired. Projecting sills or shelves can also be furnished. Consult local representative.

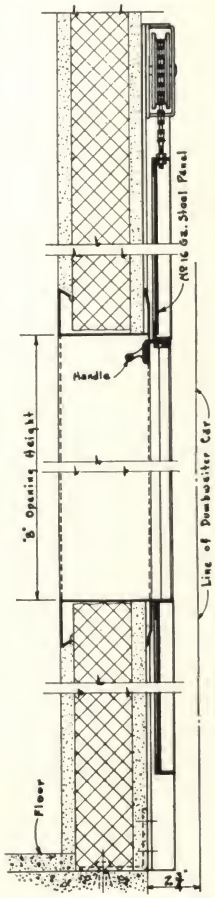
"Seco" dumbwaiter doors have proven their adaptability and efficiency for hospitals, department stores, hotels, restaurants and factories.

For restaurants and hospitals, we recommend the use of stainless steel for doors and frames.

"Seco" dumbwaiter doors are furnished with vision panels when specified. Labeled doors have a 3-in. round vision panel, other doors a 6-in. vision panel.

"Seco" doors are furnished, with prime shop coat of paint, f.o.b. destination. They are assembled on frames, ready to be built into the wall of dumbwaiter shaft. They can be set by the general contractor.

For electric dumbwaiters, we furnish our Type "E" electric interlocks and latches operated by a stationary cam on the car.



Section Showing Door in Open Position

Suggested Specifications

For all dumbwaiter door openings shown on the plans and as noted, furnish "Seco" dumbwaiter doors as manufactured by the Security Fire Door Co.

(A) The door sections shall have 16-gauge steel panels riveted into angle frames.

Provide the necessary steel guides, ball bearing sheaves, cable chains and other hardware. Doors to be attached to steel frames, ready for setting into the masonry wall. Doors and parts to receive prime coat of paint at the factory.

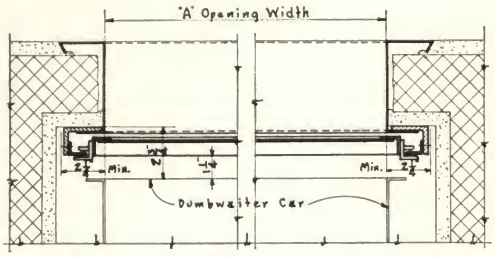
(B) The door sections shall have insulated steel panels interlocked with the metal frame at head and sills. Door to be labeled by the Underwriters' Laboratories, Inc. Provide 3-in. diameter vision panel.

For electric dumbwaiters, specify Security Type "E" interlocks and latches. The wiring for interlocks, also retiring cams if required, should be installed by the dumbwaiter contractor.

Both the labeled and unlabeled doors are usually furnished with sheet steel frames, forming flush trim on roomside. These frames are reinforced with angles that extend to floor and above opening to sheaves or beyond to beams as specified.

Channel frames can be furnished when specified.

Note: Metal clad or kalamein dumbwaiter doors require 3 in. of space from car to wall.



Showing Angle Frames with Flush Trim for Tile or Plastered Walls

Trim furnished only when specified

ST. LOUIS FIRE DOOR CO.

Counterbalanced and All Types of Freight Elevator Doors
Dumbwaiter Doors, Warehouse and Shipping Platform Doors
Electric Operators for All Types of Doors

1134-42 South 6th Street, ST. LOUIS, MO.

Products

"ST. LOUIS" COUNTERBALANCED, MOTOR OPERATED, FREIGHT ELEVATOR DOORS, and ELEVATOR CAR GATES.

TI-CO-DORS: Counterbalanced Freight Elevator Doors, in metal clad and kalamein paneled construction.

CO-BAL-DORS: Counterbalanced Freight Elevator Doors, in corrugated, steel plate and wire mesh construction.

WAL-EL-DORS: Vertical Two Section Slideup Doors, in metal clad, kalamein paneled, corrugated, steel plate and wire mesh construction. Also in one section slideup, in any construction.

DUMBWAITER DORS: Counterbalanced or One Section Slideup, or One Section Slidedown "Under-the-Counter" Doors, in metal clad, kalamein paneled, steel plate and stainless steel construction.

ELECTRIC MECHANICAL INTERLOCKS for all types of doors.

FOLD-UP-DORS: Jack Knife type, in wood, metal clad, kalamein paneled, corrugated and steel plate construction.

ALSTEEL DORS: Fire Doors —Swinging and Sliding types.

ELECTRIC OPERATORS for Sliding and Swinging Doors.

FRAMES, TRIM, ROUGH BUCKS, etc., for Dumbwaiter Dors and other doors.

The Company

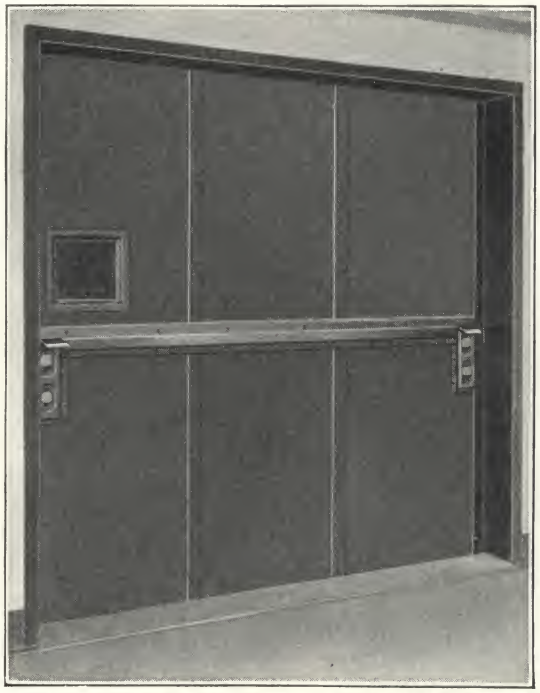
The ST. LOUIS FIRE DOOR CO. has specialized as door and operator technicians for the past thirty-six consecutive years.

Distribution, Service, and Erection

Resulting from their long establishment, they have agencies in all principal cities in the United States. All Sales Representatives have experienced facilities for erection and service.

Underwriters' Label Service

Doors of this manufacturer are labeled by the Underwriters' Laboratories, Inc., and the Factory Mutuals. Doors installed and bearing such labels reduce insurance rates.



Typical Metal Clad "ST. LOUIS" G-1 Ti-Co-Dor, U. S. Post Office, Jefferson City, Mo.

Engineering Consultants and Planning

The Engineering Department of this manufacturer gives its particular attention to inspection, analysis, layouts, and detailing of projects. Their work is conducted gratis for the convenience of engineers, architects and contractors.

Construction of Products

Every detail of construction on "ST. LOUIS" Counterbalanced Freight Elevator Doors represents simplicity, practicability, durability, sturdiness, and appearance. Salient features, not to be found in any other similar product, identify "ST. LOUIS" Doors exclusively and are some of the prime reasons why the doors when once properly installed, last indefinitely, as evidenced by the numerous installations in all parts of the United States bearing their name.

Operation and Maintenance

Indicative of the details and feature construction of "ST. LOUIS" Doors, the actual manual operation is smooth and friction free so that continuous operation is easy. Consequently, elevator service is facilitated to the maximum. In the process of research, designing, experimentation, and fabricating, the engineering staff paid strict attention, among the other requisites of correctness, to the item of maintenance. As a result, the maximum lubrication requirement is fulfilled with an ordinary oil can. Few and simplified working parts are pronounced throughout the various types of doors. Indefinite longevity, therefore, is inevitable.

Safety and Features—Patented

"ST. LOUIS" Counterbalanced Freight Elevator Doors are absolutely safe equipment. Particularly so, by virtue of the plug proof, tamper proof type U electric mechanical interlock which is an exclusive component device, the function of which is to positively make the elevator car inoperative while the door is anywhere in the open position, and to keep it so until the door is not only closed again but securely locked. An ingenious but simple lock rod guards against "plugging" the interlock, and so definite is its action that unless the installation would be dismantled, the feature would defy all attempts to "plug" the device. Wherever these interlocks are used, liability insurance is reduced 10%. Adjustable latch bars, which can be extended or diminished for accurate latching and engagement with the electric mechanical interlock; adjustable renewable malleable guide shoes for removing excess side-play from the panels; double radial ball bearing internal-oil reservoir lubricated sheaves; sill leveling adjustable sill stops and gusset corner reinforcements; malleable chain sockets, and pressure glued patent leveled sheets are all constituent features which make up "ST. LOUIS" Super Counterbalanced Freight Elevator Doors.

Types of Doors and Space Requirements

Pass type counterbalanced doors with extended trucking angles are made for low story heights, but where the heights are sufficient, regular doors are used. Corrugated doors are preferred by some, yet much more frequently the G-1 Metal Clad Kalamein Ti-Co-Dors are used because of their basic substantiality due to thickness and weight. The G-1 Door has come to be recognized and acknowledged the superior type of door. For push button controlled elevators, G-1 Doors with interlocks, vision panels, and room side latch handles are complete equipment. Regular type doors require minimum story heights of 1½ times opening height plus 7 in. Pass type doors require minimum story heights of opening height plus 1 ft. 6 in. The pit depth required is ½ opening height plus 5 in. The minimum return space required from the opening jams, sidewise, is 8½ in.

"ST. LOUIS" INDIVIDUAL TYPE MOTOR OPERATED DOORS FOR FREIGHT ELEVATORS

PATENTED

Operation

The most modern type of counterbalanced freight elevator door installations are those motor operated by "ST. LOUIS" Electric Operator Units. The units comprise a shaft side power unit mounted on one door guide in the proximity of the lintel with a coördinating counter connected chain-driven sheave unit opposite, fastened to the other door guide, both transmitting equivalent motive force to the door through the safety cable chains on which the door is hung to the units. The counter connecting chain is a sprocket chain which runs in a chased recess in the wall above the lintel. A steel facia plate covers over the recess to exclude dust and dirt.

Steel gears, pinion, sprockets, sheaves, and a torque motor of ample size is the basic driving principle employed. Driving power loss from friction is minimized with precision ball bearings into which all rotating parts are set.

Torque motors are particularly suited for "ST. LOUIS" Door Operators because of their advantageous starting and slow-down characteristics and resistance to stalling without injury.

Control

Opening and closing "ST. LOUIS" Motor Operated Doors is controlled through push buttons located in the elevator car wainscoating. "Open," "Close," and emergency "Stop" buttons cause the door to function correspondingly. Opening is accomplished in a brief few seconds by momentary pressure; closing by constant pressure to insure safety to freight elevator traffic passing on and off the car, and "Stop" for instant emergency action.

Master Control

An extremely simplified master control located in the pent-house governs the actual functioning of the electrically operated doors. Through it, the doors are started and stopped and of particular note, electrically slowed down to prevent slamming on the sill upon opening and bumping together when closing.

Co-related with the stopping of the car at a particular floor level and with the action of a retiring cam, a zone control at that floor acts as the "selector" of that door to be operated. It first breaks the car circuit, secondly, unlocks the door, and thirdly, energizes the door operating circuit. Reversely, the door is closed, locked, and the car circuit is re-established.

Shaft Side Elevation of "ST. LOUIS" Motor Operated Counterbalanced Door
One of 38 in the U. S. Post Office, Cincinnati, Ohio

Cams

Retiring cams are customarily used when a shaft is over two landings high. That type of cam is fastened to the elevator car in line with and for engagement of the zone controls. All "ST. LOUIS" retiring cams are torque motor operated.

Manual Operation

It will be noted that any failure of the electric current or some other unforeseen interference to the Door Operator, will not deprive the use of the elevator car, because the doors can be easily manually operated. It is an accepted fact that standard make motors last many years in ordinary service; therefore it must be conceded that a special torque motor such as is used on the Operator Unit provides permanency. Nevertheless, a "spare" motor, adaptable to any "ST. LOUIS" Unit, is furnished at cost. Only four large bolts hold a motor in place so that it is quickly and easily removed in emergency.

Operated Car Gates

Motor Operators are similarly applied to car gates and will open them as quickly as the counterbalanced door. A very effective safety feature on the bottom of the gate stops it if it encounters an obstruction in its descent. "ST. LOUIS" furnishes and installs both gates and operators complete with guides, counterweights, chains, etc. Gates and doors can operate simultaneously or selectively without increasing their initial cost.

Saving

The entire Operator Unit is shipped from the factory completely assembled and carefully tested ready for installation at the building. Thus, due to this completeness, the erection cost is reduced to an absolute minimum.

The hookup, in addition, is so simple that only one conduit stack goes up the shaft.

A decided advantage is the reversible feature of the unit, which at times becomes of vital importance when an obstruction is found existing where the Unit was originally to be placed. Under such conditions, the Operator Unit is simply moved to the opposite side and inverted: no time is lost nor expense involved.

Speed

Approximately four seconds are recommended for opening doors of ordinary height; however, any suitable speed can be arranged for prior to manufacture.

Efficiency

Electrically Operated Freight Elevator Door efficiency is 40% greater than that of manually operated doors, engineers say. That percentage represents the saving in a working day!

Guaranty

"ST. LOUIS" Electrically Operated Doors bear a guaranty against defects in material and workmanship for a period of two years after installation by this manufacturer.

Space requirements applicable to "ST. LOUIS" Individual Motor Operated Doors are as follows: chase, 2 in. deep on shaft side face of wall; distance above lintel to bottom of chase 5½ in.; height of chase 8 in.; extension of chase beyond jamb line on motor unit side 11 in.; extension of chase on opposite side beyond jamb line 7 in.

Data

Data required for estimating should indicate whether A-c. or D-c. current is available, cycles and voltage, and the type of car control, i.e., push button or car switch; also what size doors are to be operated and the space available.

"ST. LOUIS" WAL-EL-DORS—VERTICAL TELESCOPING FREIGHT ELEVATOR DOORS

Corrugated Wal-El-Dors

Wal-El-Dors are freight elevator doors of the two speed, two section vertical telescoping type, the lower section of which travels twice as fast as the upper section, both, however, meeting at the lintel of the opening at the same time, thus allowing the use of the full opening height. Wal-El-Dors require a sill projecting out into the elevator shaft: for corrugated doors 4½ in. and for metal clad doors 6 in. The minimum return space required from the opening jambs, sidewise, is 9 in. The headroom required above the lintel is half the opening height plus 11 in. to the underside of the sill at the floor above.

By virtue of the type of building sill construction necessary for Wal-El-Dors, all trucking carried on through the opening, is over the solid sill structure of the opening, onto the elevator car platform. The Wal-El-Dor is, in the meantime, up, overhead, out of the way, so that it is not subjected to the likelihood of sustaining injury from being struck and distorted.

Wal-El-Dors can be furnished with a fuse-link device, so that if the door is in the open position, in the event of fire, the door will close automatically.

Wal-El-Dors represent a combination of safety gate and fireproof door—but any maintenance to a Wal-El-Dor is negligible, compared singly to a safety gate and fire door on an existing freight elevator opening. Wal-El-Dors are installed on the shaft side of the wall, and depending upon the location of the shaft in the building, either a corrugated door or a metal clad door should be selected.

A Typical Wal-El-Dor Installation

Metal Clad Wal-El-Dors

Metal clad Wal-El-Dors, of course, are more sightly than the corrugated. Metal clad Wal-El-Dors are, for instance, used on exterior openings, to withstand the deterioration of weather and deflect radiation of heat and cold into the shaft. They blend with adjacent treatment of walls, corridors, and rooms. If corrugated Wal-El-Dors are given a select painted finish, though, their adaptability will be as comparable as the metal clad.

Metal clad Wal-El-Dors can be paneled or flush construction, as the case may require. Their rigid mass construction is more than ample to withstand the strain of impact and distortion, if imposed by accident.

Standard hardware consists of heavy steel safety cable chain, certified malleable castings throughout, adjustable latch bars, adjustable renewable guide shoes, double radial ball bearing internal oil reservoir lubricated sheaves, and heavy chain sockets.

"ST. LOUIS" FOLD-UP-DORS—JACK KNIFE TYPE

Fold-Up Dors are attractive appearing and are most satisfactory for factory buildings, warehouses, shipping platforms, freight houses, baggage rooms, docks, piers and car sheds. Fold-Up-Dors can be installed in either new or old buildings. Fold-Up-Dors will withstand severe abuse and usage, because of their special hard wear construction. This type door allows the use of the full masonry opening when open. It fits tightly against the wall, and is weather-proof when closed. It always occupies but little space either opened or closed.

By arranging the upper door section with glass, a well lighted interior is assured. Unless otherwise specified, Fold-Up-Dors are constructed of 2¼ in. thick White Pine stiles and rails and ⅞ in. matched and beaded partition material in the panels of the upper and lower sections, or with the upper section arranged for glass. A wicket door can be built into the lower section. The Dor is divided horizontally into two sections, both halves folding up under the ceiling above the lintel on the inside of the building. The Dor is evenly counterbalanced by counterweights and is operated by an endless hand chain hoist. A lock at the center on each side secures the Dor when closed and draws it tight against the wall.

In a similar manner Canopy type Fold-Up-Dors can be installed on the outside face of the building, with the hoist and locks on the room side. Either type of Dor can be constructed of wood, steel plate, corrugated iron, flush metal covered, or kalamein paneled.

A Typical Warehouse—Factory Platform Installation

Battery of 75 Fold-Up-Dors Installed on a Freight House

"ST. LOUIS" DUMBWAITER DOORS

Counterbalanced Door

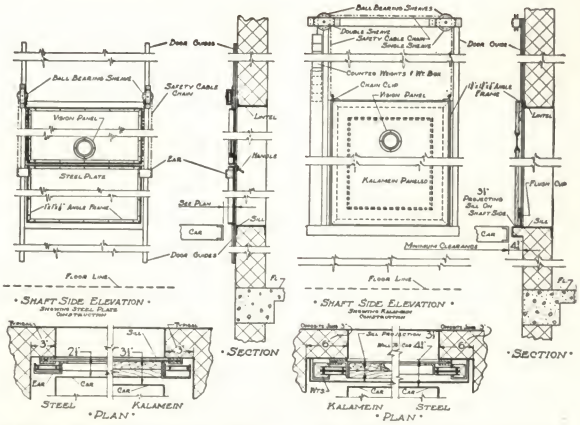
The Counterbalanced Dumbwaiter Door is one complete unit ready for setting in the shaft wall and subsequent use. The door slides in guides which are component parts of the structural braces of the unit. To the structurals, the unit's pressed steel finish framing is fastened. Then the remainder of the fixtures, devices, and appurtenances are built on and the whole is complete, operating, and ready for shipment from the plant.

One Piece Slide-Up-Door

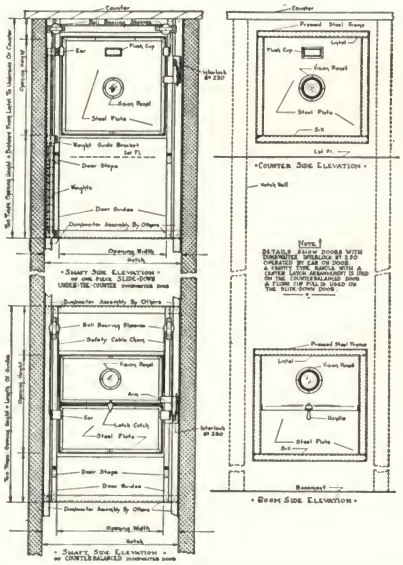
The One Piece Slide-Up Dumbwaiter Door is identically fabricated in that when it is finished, it is one complete unit, excepting, of course, that its function is different than that of the Counterbalanced Door.

One Piece "Under-The-Counter" Slide-Down Door

The One Piece "Under-The-Counter" Slide-Down Door is a new "St. Louis" creation. It is primarily designed for the desirable convenience as a means of access to the dumbwaiter immediately under the counter, instead of at some remote part of the store, room or building. A dumbwaiter, located elsewhere than under the counter, utilizes valuable space; an "Under-The-Counter" Slide-Down Door economizes with the under the counter dumbwaiter.



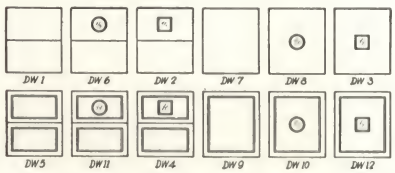
COUNTERBALANCED DOORS — ONE PIECE SLIDE-UP DOORS



•Typical Details Of Dumbwaiter Doors For Under-The-Counter Application•

Construction of Door Units

A wide variety of door and frame construction suits the three above types of doors to any application. Metal clad, Kalamein paneled or stainless steel blends with adjacent treatment of conspicuous walls, corridors, and rooms. Steel plate is adaptable to more or less out of the way places, but if the painted finish is select, it too is equal to those mentioned for conspicuous locations.



All Designs Shown Are Made In The Wood Metal Covered Construction. Designs DW 1-6-2-7-8-4-3 Are Made In The Steel Plate Construction Designs DW 1 6 2 5 11 4 4 Are Counterbalanced Type. Designs DW 7 8 3 9 10 11 12 Are One Piece Slide-Up Type

•Roomside Elevations Of Dumbwaiter Doors

Devices on Door Units

Standard devices and fixtures are specifically designed for exacting function with "St. Louis" Dumbwaiter Doors. Round vision panels, (for seeing the approach of the dumbwaiter), positive latch, ball bearing sheaves, and positive electric mechanical interlock, openable only when the dumbwaiter is stopped at the sill, are standard equipment.

Electric Operator for Sliding and Swinging Doors

These operators are adaptable on openings for doors—new or old—of all descriptions. The motor operated unit mounts immediately above the lintel of the opening, and requires an exceedingly shallow head room. Complete simplicity predominates throughout its entire construction: a standard motor, worm and gear drive all set in bearings; a time relay for closing in one second or several minutes; instantaneous stopping when the door meets an obstruction in either opening or closing direction; and any number of push button stations, near or remote, are particularly salient features. It takes but 4 hours to install an operator—and anyone capable can do it. This operator is produced to modernize manually operated doors and the cost is so inexpensive as to be remarkable.

"St. Louis" Alsteel-Dors

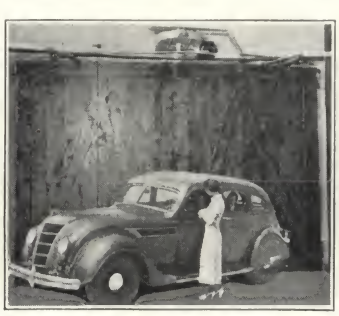
Alsteel-dors can be purchased for the same cost as tinclad doors, and are perfect substitutes for them.

Underwriters' standard approved automatic hardware as used on tinclad doors is also used on Alsteel-dors.

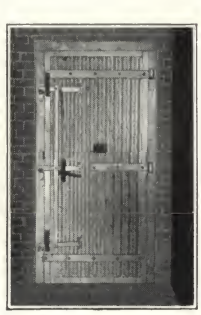
The weight of the Alsteel-dor is approximately 4½ lbs. per square foot, in comparison to a weight of 8 lbs. for tinclad doors. Because of its indestructible steel construction, the Alsteel-dor (except for lubrication) is free of maintenance expense.

Alsteel-dors are approved and labeled by the National Board of Fire Underwriters' and all Factory Mutuals Companies.

Insurance credits are identical for the use of Alsteel-dors as for tinclad doors, and are classed equally.



Slide and Swing Door Operator on Doors Opened and Closed



Sliding and Swinging "St. Louis" Alsteel-Dors

SIMPLEX DOOR CO.

Manufacturers of Freight Elevator Doors
612 N. Michigan Avenue, CHICAGO, ILL.

SIMPLEX TRUCKABLE COUNTERBALANCED FREIGHT ELEVATOR DOORS

Metal Clad, Kalamein or Corrugated Steel Panels

Simplex Counterbalanced Doors embody the latest improved features in freight elevator door construction. They are in use in factories, warehouses, mercantile buildings, hospitals, schools —in fact in every type of building equipped with a freight elevator.

Special features that reduce friction guarantee easy operation. Reinforced trucking bars that set flush with the opening sill provide a smooth trucking surface between elevator car and opening sill. All parts are designed to provide simple, smooth and continued operation under the severest service requirements.

Simplex Doors are usually furnished with F-6 flush type metal clad panels having two-ply wood cores. These have proven to be the strongest and most practical for freight elevator use. Vision panels are furnished when specified.

Simplex Doors can also be furnished with kalamein or corrugated steel panels.

Adjustable Shoes—The door sections are provided at each side with special friction reducing patented Adjustable Shoes. This is a very important feature. Through the use of Adjustable Shoes it is possible to easily erect the doors with a minimum amount of clearance between the door sections and guides and to maintain the doors in this manner after long, continued use.

Ball Bearing Sheaves—The door sections operate in heavy steel guides, and are hung on heavy adjustable steel rods and flexible steel cable chains operating over 5-inch double race ball bearing sheaves.

Latches—Simplex Doors are provided with specially designed anti-pinch center hook latches, easily operated both when opening and closing the door.

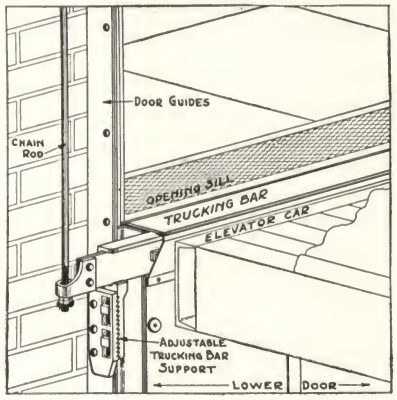
When room side handles are specified or required for Push Button elevators, a simple bow type handle is attached to the room face of angle astragal. A slight upward pull on this handle releases the hook latch and permits raising of the door with the same upward thrust.

Interlocks—Simplex Doors are equipped with electric interlocking devices that prevent the operation of the elevator until all doors in shaft are closed. For push button elevators special latch devices are furnished in addition to the interlocking devices so that the door cannot be opened from either the room or shaft side until the elevator car is at the floor level and special latch is released by the cam attached to the elevator car.

Trucking Bars—(See diagrams below).

Vision Panels—Vision panels are furnished when specified. A vision panel is necessary when Simplex Doors are used with a Push Button or Hold On Button elevator having room side operating buttons. Vision panels having a clear 8x10-in. opening are furnished unless otherwise specified. Larger openings are not permitted in labeled doors.

Room Side View F-6 Metal Clad Panels
(Showing Glass Vision Panel)
Strongest and most practical construction



Shaft Side View Showing Special Adjustable Stops for Door Trucking Bar
Door Is Kept in Alignment with Opening Sill

Simplex Metal Clad Counterbalanced Doors

These Metal Clad Simplex Doors with the steel frames around the door sections, are of fireproof construction, thereby protecting the elevator shafts not only against accidents, but, also, against the spread of fire from one floor to another.

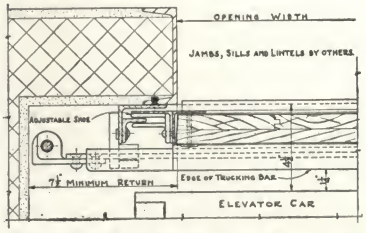
The Metal Clad panels are made of two thicknesses of white pine, clinch nailed together and covered on both sides with smooth, galvanized steel sheets securely fastened to the wood cores and with special reinforcing clips at the vertical joints between the sheets so as to provide flush type panels.

The majority of architects and users now specify the type of construction, known as our F-6, for they have found from experience that this type of door is attractive in appearance as well as being built for service.

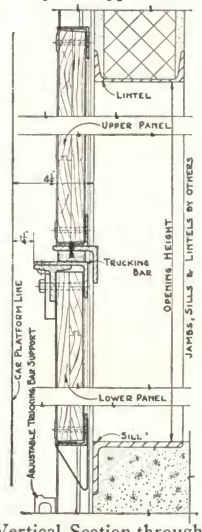
Simplex Metal Clad Doors are of rugged construction throughout. Simplex Doors for large openings are properly reinforced, and when the elevator capacity is indicative that heavy trucking loads will pass over the door the Trucking Bars are also heavily reinforced to properly sustain the trucking load.

Simplex Metal Clad Doors can be labeled for openings that do not exceed 8 ft. 0 in. in width or 10 ft. 0 in. in height.

The structural steel frames and sills for all freight elevator openings should be specified in Miscellaneous Iron or Structural Steel Work.



Plan at Jamb—Regular Type Metal Clad Simplex Door



Vertical Section through Regular Type Metal Clad Simplex Door

Simplex Pass Type Metal Clad Counterbalanced Doors

Simplex Pass Type Doors with Metal Clad panels are used where low story heights do not permit the use of Regular Type doors.

The Pass Type can be used where the story height from finished floor to finished floor is only eighteen inches greater than the opening height, provided openings directly above each other are of equal height.

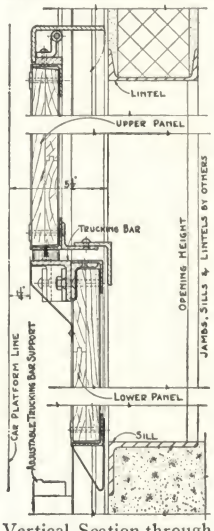
For openings of varying heights, some additional space allowance is necessary.

Simplex Pass Type Metal Clad Doors are especially adaptable for garages, warehouses and industrial plants where high openings are required.

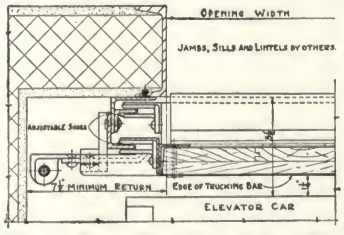
Pass Type doors require larger size Trucking Bars due to the fact that the doors are staggered and operate in double guides to permit the upper door section on one floor to pass the lower section of the door on the floor above. The gap between the upper edge of the upper door section and the lintel of the opening is closed by means of a hinged Movable Lintel or Filler Plate attached to the top rail of upper door section.

Pass Type and Regular Type doors can be installed one above the other by providing the Regular Type doors with extended or Pass Type Trucking Bars.

Simplex Pass Type Doors are labeled by the Underwriters for openings not exceeding 8 ft. 0 in. in width or 10 ft. 0 in. in height.



Vertical Section through Metal Clad Pass Type Simplex Door



Plan at Jamb—Pass Type Metal Clad Simplex Door

ESTABLISHED 1846

CORNELL IRON WORKS, INC.

Steel Rolling Shutters and Doors; Underwriters' Labeled Fire Doors and Shutters; All Other Types of Upward Operating Doors and Grilles

TELEPHONE
STillwell 4-3880, 3881, 3882

3610 to 3630 13th Street
LONG ISLAND CITY, N. Y.

For Local Representatives in Principal Cities, Consult Telephone Book or Write Home Office for Address

Products

CORNELL IMPROVED DEEP ARCH INTERLOCKING SLAT STEEL ROLLING DOORS and SHUTTERS, handle, chain, crank, or motor operated, for wharves, piers, terminals, warehouses; freight platforms, elevator shafts, garages, store fronts, craneway openings, office buildings, interbuilding communicating doors, residences, hospitals, schools, power plants, and a host of industrial and factory buildings.

Send for 32-page catalogue, with complete dimensions, specifications and other constructive information.

For Cornell Float-over Doors (overhead acting) in steel and wood, and Cornell Rolling Grilles, see File Index.

Location

Cornell Doors are manufactured in Greater New York in a modern one-story factory. Unsurpassed shipping facilities by all railroads, as well as water routes to all points on the east, south and west coast, the Great Lakes and all foreign points.

Since 1846

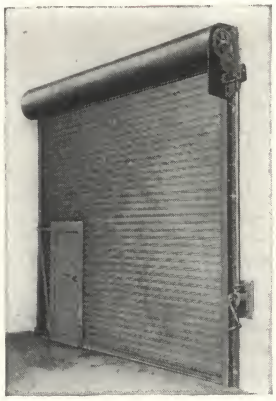
CORNELL is the *oldest* rolling door manufacturer in the United States. Cornell Doors have been in use for well over half a century. Our later types embody many modern improvements and exclusive features.

Description

Cornell Steel Rolling Doors are designed for the closure of all types of openings. They offer fire, burglar and weather protection, combined with neat appearance and economy of space.

The curtains (see below) run in vertical side guides and coil around a horizontal shaft above the opening. The weight of the curtain is counterbalanced by springs in the shaft, which permit it to remain stationary in any position.

Cornell Steel Rolling Doors are also furnished with exclusive non-corroding curtain bottoms. Entire non-corroding curtains of bronze, aluminum, rustless steel or zinc carry only a reasonable extra cost.



Type HCF Hand Crank Door with Wicket

Hand crank operation, face of wall location. Note small wicket door, frame of which swings out when the rolling door is coiled

The question of size offers no problem. Cornell Rolling Doors and Shutters are made up to 45 ft. in width and 100 ft. in height, and are constructed to meet most unusual requirements.

Underwriters' Label

Cornell (Llenroc) Rolling Fire Doors have been thoroughly tested by, and made to meet the standards of, the Underwriters' Laboratories, Inc., Chicago, Ill. Each door carries their label. They are also approved by the Factory Mutual Laboratories.

Fusible links control the doors to make certain automatic closing at 150° Fahr.

Cornell labeled doors operate easily, for normal service, independently of the automatic devices. They are not difficult to operate after they have closed automatically.

The Following Features Are Notable—A powerful starting force, acting immediately upon the parting of the fusible link and diminishing as the door descends.

An automatic braking action to prevent a jarring closure, with an additional governor where required.

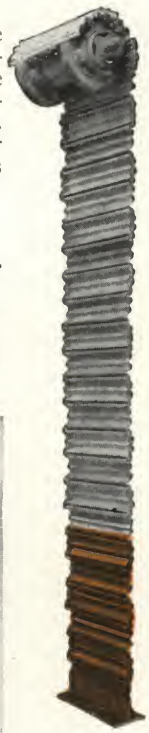
Non-corrodible rolling contacts for the automatic release.

Non-corrodible, self-lubricating bearings throughout.

Thirty designs of Cornell Labeled Fire Doors include: fire wall doors, Class "A"; vertical shaft doors, Class "B"; corridor doors, Class "C"; and exterior doors and shutters, Class "D."

Take Minimum Space

Cornell Rolling Doors take the minimum of room. They are all-metal and will last as long as the building. They operate with surprising ease in the largest sizes. They are easily repaired, after accident, with a few new slats quickly inserted.



Above:

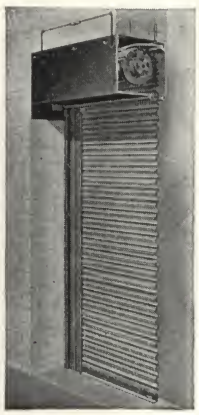
End View of Curtain

Bronze bottom slats

Below:

Cornell Type 101A, Single, Labeled Fire Door Operating Between the Jambs

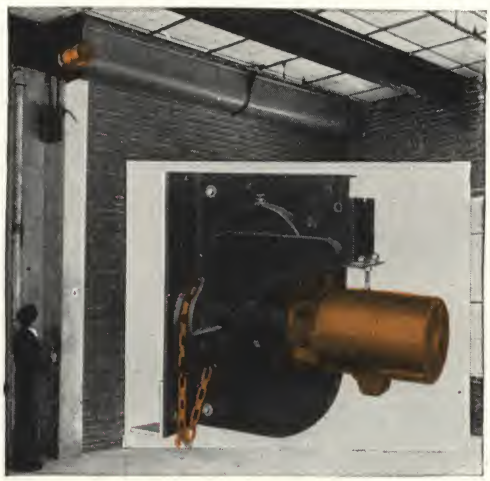
Coils under the lintel in the opening. Note fuse link; and hinged baffle plate which drops on the curtain top in case of fire



Above:

End View of Shaft and Curtain

Note the malleable iron end locks with double riveted lips and the deep arch of slats



Cornell Motor Operated Door

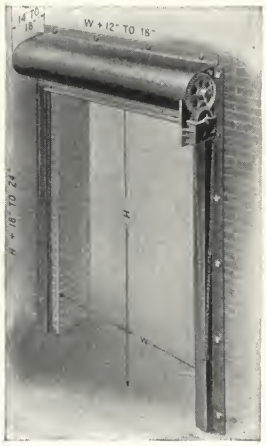
Cornell Operator is not a stock gear operating unit, it is specially designed for rolling doors. Note the clean, compact, self-contained unit, eliminating all exposed parts. Controlled by push buttons at any point

Below:

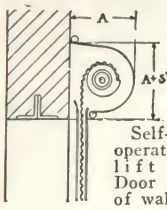
Type CGF Chain and Gear Door

Standard Cornell Door for an opening over 80 sq. ft. Hand chain revolves shaft in either direction to raise or lower the curtain.

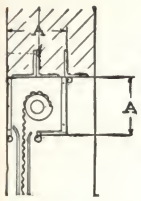
Note typical dimensions



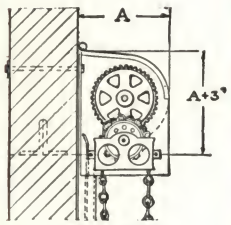
TYPES OF CORNELL COMMERCIAL SERVICE ROLLING DOORS



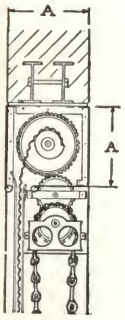
Type SCF
Self-coiling operation with lift handles. Door on face of wall



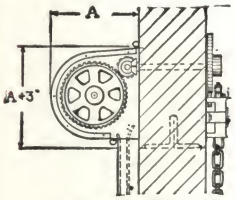
Type SCB
Self-coiling operation. Door between jambs



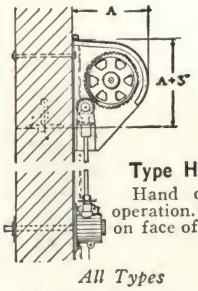
Type CGF
Chain and gear operation. Door on face of wall



Type CGB
Chain and gear operation. Door between jambs



Type CGTF
Chain and gear operation, through wall. Door on outside

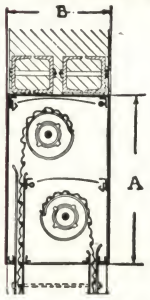


Type HCF
Hand crank operation. Door on face of wall

All Types
A = 14 ins. up to 7 ft. opening height. Add 1 in. for each 3 ft. of additional height

Not Visible When Open

Partially Closed



Underwriters' Labeled Doors, One Coiling Above the Other

The Cornell Fire Doors, illustrated above at right, are located between jambs and can be made invisible when open, making them practical for the most luxurious interiors, yet ready to fulfill their purpose. The fascia plates are entirely hidden by plaster

(See Diagram at Left)—A=32 ins. for doors up to 8 ft. net height. Add 1 in. for every additional foot of height. B=19 ins. for doors up to 8 ft. net height. Add 1 in. for every two additional feet of height.

Unusual Installation of Bronze Cornell Rolling Doors

Operation

There are four typical methods of operation:

Self-coiling Type — Standard for openings up to 80 sq. ft. and below 8 ft. in height. Push up and pull down by handles on the bottom bar. The quickest acting construction possible.

Hand Chain and Gearing Type —Standard for larger openings. Shaft revolved by endless hand chain, acting through single or compound gearing on an overhead gear bracket.

Motor Drive Type—Standard for the largest openings.

Hand Crank and Gearing Type —Alternate to hand chain type, where operation by a removable hand crank is preferable.

Underwriters' Labeled Doors —In all of the above types.

Cornell Improved Interlocking Steel Slat Curtains

Designed to give unusual rigidity against wind pressure, having a depth at the crown of ⅞ in. The appearance is attractive from either side, as the curtain is made up of a series of cold rolled copper bearing steel mouldings with deep relief. The end locks are malleable iron designed for maximum wear and strength. Furnished in U. S. gauges from No. 16 to 22, cold rolled and galvanized.

Cornell Non-corroding Curtains

Of cold rolled bronze, aluminum, rustless steel or zinc interlocking slats protect most vulnerable part of all exposed doors. An original Cornell product. Require no painting. Of great service in resisting coal gas, acid fumes, severe salt water exposure, etc. Give a handsome finish at small extra cost.

Cornell Exclusive Non-corroding Curtain Bottoms

Experience proves that all exposed doors and shutters of steel corrode fastest at the bottom. To neutralize this, CORNELL IRON WORKS, INC., has originated the feature of using 12 to 18 ins. of bronze or rustless steel bottom slats for exposed doors. The extra cost is small and the life of the installation may often be more than doubled by this method.

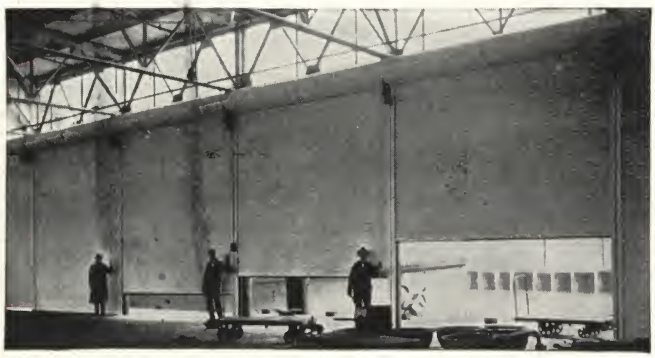
Motor Driven Units

Cornell motor drives *(illustrations on preceding page)* are made in a self-contained unit, completely assembled in the shop. The new model Cornell Operators are specially designed and constructed for rolling doors. The worm is placed under the worm wheel, is completely enclosed, and runs in an oil bath.

Automatic starters and push buttons are furnished with all installations.

Electric brakes are furnished and an emergency hand chain operator is disengageable from the floor if required, releasing the motor brake and opening the motor circuit.

Operation—On pushing the button, the solenoid acts to open the brake and the door moves up or down at a rate of approximately 1 ft. per second. On reaching the top or bottom of the door travel, the limit switch operates, automatically cuts off the current, stops the motor, cuts out the brake magnet and lets the brake go on with full power, locking the entire mechanism against further travel. The action is foolproof.



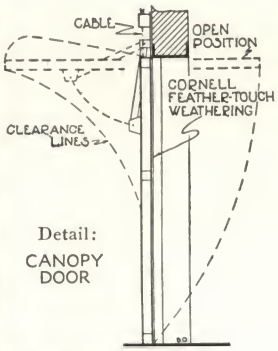
Catalogue and Service

Write for 32-page catalogue containing illustrations, full dimensions and specifications, or special folder on Cornell Non-corroding Curtains. Our Department of Engineering is at your disposal for competent advice or suggestion. Dimension drawings, etc., prepared to suit your requirements.

Left:

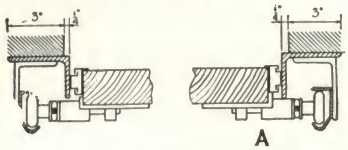
Six of the 41 Cornell Rolling Steel Doors, Piers of N. & W. R. R. Co., Norfolk, Va.

Cornell CGF, Chain Geared, Face of Wall Doors

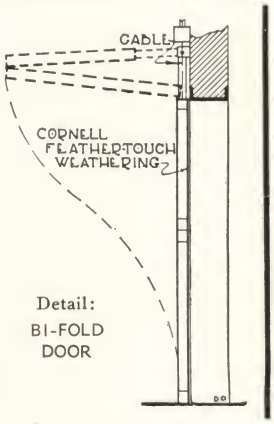


Portion of 439 Cornell Canopy Doors Bronx Terminal Market

Cornell One-Piece Canopy Doors



This gives a construction with few moving parts, making an economical door very easily erected. Cornell Canopy Doors operate with a touch. Counterbalance is usually accomplished with weights but an overhead spring shaft may be used. Cornell self-adjusting steel weatherstrips make a tight closure at the jambs. Push-up operation can be used to 150 sq. ft.; above—hand chain. Doors made of steel or wood. Minimum headroom is 8 in. for hand doors, 15 in. for chain operation.



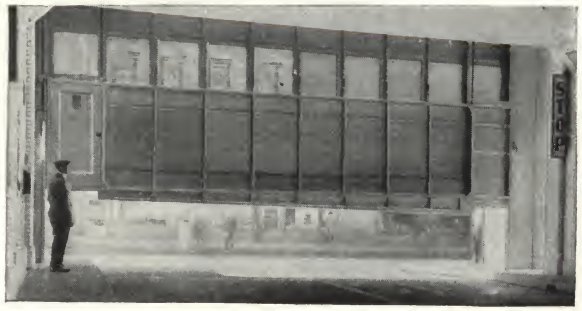
Cornell Bi-fold Door

This jack knife type of door is an old favorite for commercial installations requiring a heavy duty door, made of steel or wood. The weight of the door is counterbalanced by springs in an overhead pipe shaft or by counterweights at the jamb. The spring shaft allows a jamb clearance of only 3 in. Counterweights require from 12 to 18 in. at one jamb. Push up operation is satisfactory for doors up to 90 sq. ft. of average weight, above which hand chain with gear reduction is required. Operate fast and easily, take minimum floor space and permit glazing.

Left:

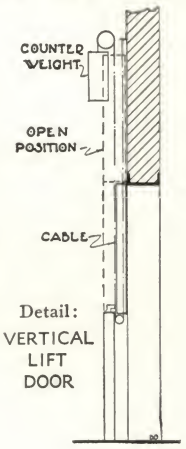
Cornell Bronze Rolling Grilles, Luchows Restaurant

For page completely explaining and illustrating Cornell Rolling Grilles of Steel, Bronze, etc., see File Index



Cornell Vertical Lift Door—Two-Piece with Louvres, 30x14 Ft., Motor Operated, Rockefeller Center, New York, N. Y.

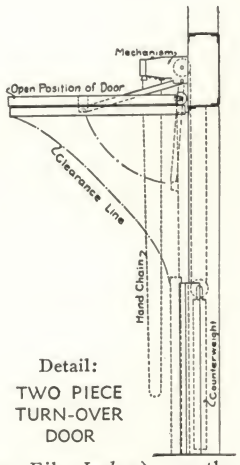
Vertical Lift Doors



Where headroom is available the one-piece vertical lift type gives the simplest construction and operation of any upward acting door. Counterweights permit a perfect balance at all points in the travel. Where headroom is limited Cornell Vertical Lift Doors can be made in two or three telescoping sections, reducing the clearance necessary above lintel to one-half and one-third. Vertical lift doors, on structural steel frames, are suitable for openings practically as wide as desired. They permit of very satisfactory and safe motor operation.

Cornell Two-Piece Turn Over

This door is a standard for piers and large commercial openings where glass is required. The frames are made of 3 or 4-in. structural members. Lower half rises vertically, picks up top half and the two turn over together under the ceiling. Counterbalance by weights, operation by hand chain acting through reduction gearing. The design permits a vertically acting door for openings where headroom is limited to about 20 in.



Other Cornell Doors

Cornell *Float-Over* overhead doors in steel, stainless steel, bronze and two-types of wood—made to any specification and design—are explained in detail in another volume. *See File Index.*

Cornell Iron Works, Inc., are manufacturers of one of the most complete line of modern upward operating doors and rolling grilles (*see File Index*) on the market. Over eighty years of experience and reputation are behind every Cornell product.

Engineering Service and Circulars

Detail drawings of every type of Cornell Doors are available. Our competent Engineering Department is at your service for advice or special details and will gladly suggest the constructions and specifications best suited to meet your particular problems.

Circulars, catalogs and photographs of installation are available upon request.

Right:

Cornell Bronze Float-Over Door

One of many designs for metal or wood Float-Over Door. See File Index for listing of page fully explaining these doors

ESTABLISHED 1900

GEO. W. JOHNSON MFG. CO.

INCORPORATED 1906

Johnson Steel Rolling Doors and Shutters

KANSAS CITY, MO.

REPRESENTATIVES IN PRINCIPAL CITIES

Products

STEEL ROLLING DOORS and SHUTTERS.

Types

Johnson Steel Rolling Doors and Shutters are furnished in two general types:

(1) Underwriters' labeled doors and shutters—for the protection of openings where insurance rates are a consideration.

(2) Service types for general use where labeled doors are not required.

Operation

Push-up, by means of handles on bottom plates of nominal sized doors.

By chain, sprocket and reduction gearing.

By crank, shafting and reduction gearing.

By electric motor operating equipment.

Installation

Generally on face of wall with brackets and shaft above the lintel. Where necessary or desirable, with brackets within the opening under the lintel and with guides attached to the jambs. Such an installation can be made in existing openings, but better method is to prepare the opening by providing pockets for the brackets and rabbetted jambs to receive and protect the guides.

Advantages

Steel rolling doors leave entire floor space available; are easily operated regardless of size, are economical in maintenance, are long lived, and are unaffected by climate changes.

Construction Features

The drum, around which the curtain coils, revolves on *roller bearings* around a *stationary* center shaft supported by the end brackets. Highest grade oil-tempered flat motor springs, contained in the drum, are used to counterbalance the weight of the curtain. *Speed and case of operation are assured by the full roller-bearing shaft construction, and an improved and perfected internal gear drive to the door drum is used on all chain, crank and motor operated doors.* The drum supplies continuous support to the curtain at the point of attachment.

Curtains are constructed of interlocking slats formed from rust-resisting cold rolled steel galvanized to meet the requirements of the Underwriters' Laboratories, Inc. Malleable iron endlocks, riveted to the curtain edges, prevent lateral movement of the slats and provide a wearing surface in the guides.

Brackets are constructed of reinforced steel plates, this construction combining great strength with minimum weight, and readily adapting itself to the difficult and unusual requirements often encountered.

Castings are soft gray iron, malleable or steel, moulded from properly designed metal patterns and fully machined where required. Steel or malleable iron castings are used for all parts requiring great strength.

All gear shafts are of cold rolled steel, and alemite fittings are provided for easy and proper lubrication on all principal bearings.

Galvanized sheet metal hoods are furnished on all doors to cover the coils. Where required, doors are provided with means for locking.

Motor Operators—Powerful but compactly designed. Mounted directly on the door bracket or on a bed plate independently supported, and directly coupled to the door shaft. Units consist of motors, magnetic solenoid brakes, reduction gears and gear driven limit switches. Reduction gears are enclosed and run in an oil bath. Control equipment usually consists of a magnetic reversing switch with thermal relay for motor protection, and one or more three-button push-button stations marked "Open," "Close" and "Stop." General Electric Company's electrical equipment is standard. Provision is made for emergency hand operation.

One Hundred and Twenty Johnson Steel Rolling Doors

Used in the Missouri-Kansas-Texas Railroad of Texas Freight House, Houston, Texas. Track side shown

EXCLUSIVELY DOOR MANUFACTURERS

KINNEAR

ROLLING DOORS

Foreword

The Kinnear Manufacturing Company, since its founding 40 years ago, has devoted its exclusive efforts to the manufacture of doors and door operating equipment. By pioneering the practicability of the upward opening type of door, both in the field and in the factory, Kinnear has developed a door of ingenious design, constructed of high quality materials by competent and skilled mechanics. Through this leadership in the field they have naturally originated the most important improvements in door design. And today, Kinnear Doors are recognized the world over for their efficiency and economy for both service and fire protection purposes.

Every Kinnear Door is built to meet the individual requirements and doors now in excellent operating condition after 40 years of daily service give mute evidence of their efficient design and reliability of manufacture. The purchase of a door bearing the "Kinnear" name is not only your assurance of an excellent device, on which maintenance has proven to be negligible, but also the permanent availability of genuine replacement service in case of accidental damage. These are two considerations which experience has shown to be more important than that of first cost, if the purchase is to represent a paying investment.

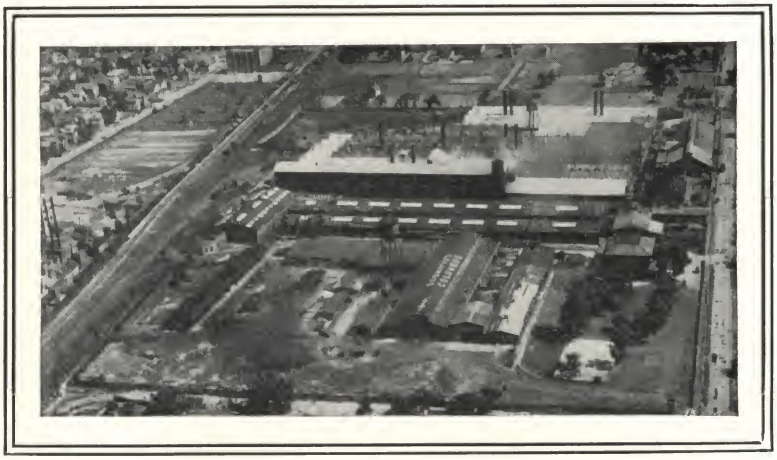
While designed primarily for doorways and window openings in all classes of buildings, Kinnear Doors are now being successfully adapted for a wide range of special uses. So, wherever a closing device is required, the possible application of Kinnear economies should be investigated.

KINNEAR WILL DESIGN AND BUILD ANY KIND OF UPWARD ACTING DOORS FOR ANY KIND OF AN OPENING—CONSULT US.

See Page 2
For Index

KINNEAR

ROLLING DOORS



Ample and modern manufacturing facilities devoted exclusively to the making of Kinnear Doors and Door Operating Equipment. . . . The Kinnear Plant and Administration Building, Columbus, Ohio.

The Kinnear Manufacturing Co.

820–870 FIELD AVENUE - COLUMBUS, OHIO

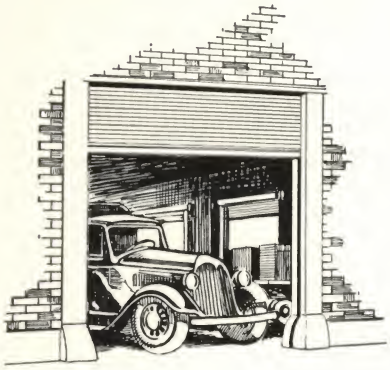
BRANCH OFFICES

BOSTON, MASS., 294 Washington Street
NEW YORK, 30 Rockefeller Plaza, R.C.A. Building
PHILADELPHIA, PA., 1321 Arch Street
WASHINGTON, D. C., 410 Bond Building
NEW ORLEANS, LA., 530 Hibernia Bank Building
CLEVELAND, OHIO, 7704 Carnegie Avenue
CINCINNATI, OHIO, 6518 Tyne Avenue
DETROIT, MICH., 7710 Woodward Avenue
CHICAGO, ILL., 1919 Randolph Wells Building
SAN FRANCISCO, CALIF., 361 Brannan Street
PITTSBURGH, PA., 1052 Century Building

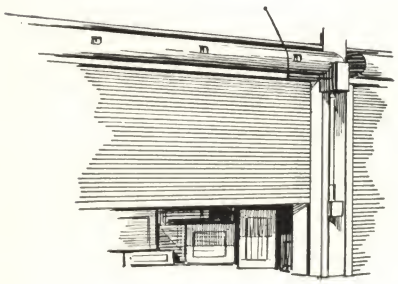
AGENTS IN PRINCIPAL CITIES

DESIGNED *and* BUILT *to* MEET K INDIVIDUAL REQUIREMENTS

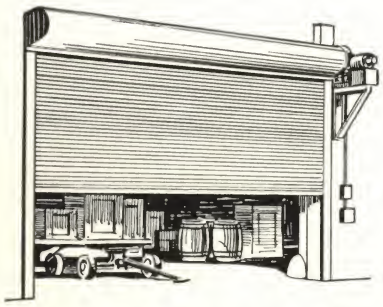
KINNEAR PRODUCTS



STEEL ROLLING
SERVICE DOORS



FIRE DOORS
AND
FIRE SHUTTERS



MOTOR OPERATED
DOORS

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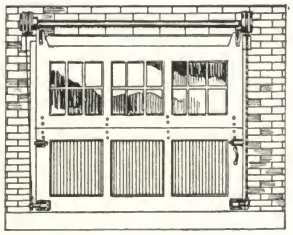
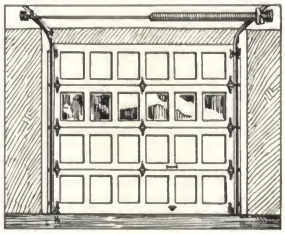
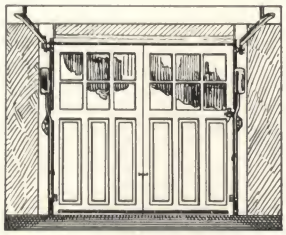


WOOD AND STEEL
BIFOLDING DOORS



WOOD AND STEEL
ROL-TOP GARAGE DOORS



TIP-TOP GARAGE
DOOR HARDWARE

Salient Advantages of KINNEAR ROLLING DOORS

AS REPORTED BY USERS THROUGHOUT THE WORLD

The advantages Kinnear Rolling Doors afford have been proved for the past 40 years. With thousands of doors giving dependable service in all classes of buildings—Industrial and Mercantile Buildings, Public and Private Edifices of Classic Design, Piers, Ware and Freight Houses and numerous special types of structures—users in every part of the world have had an opportunity to witness their efficiency and economy. Besides the convenience, low cost of maintenance and reliability of manufacture, advantages briefly listed below are the most important of those for which Kinnear Rolling Doors are universally endorsed.

1. EASY, QUICK OPERATION

Operating upward, clearing all ground obstructions and accurately and permanently counter-balanced, Kinnear Doors operate with speed, ease and smoothness . . . effecting substantial savings in time.

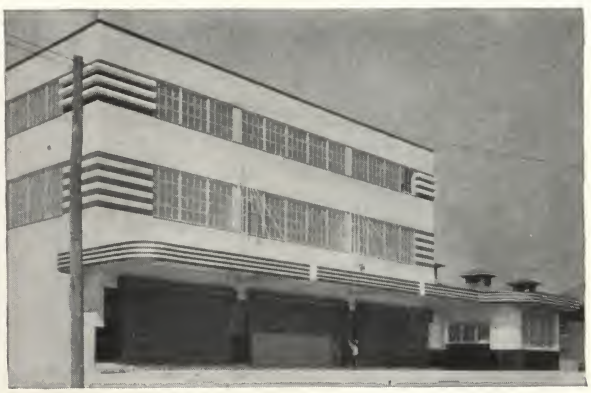
2. SAVING SPACE

When open, Kinnear Doors are stowed overhead, where space is cheap—not requiring expensive floor or wall space. Merchandise or materials can be stored within a few inches of either side of the door, without hampering its operation.

3. GREATER DURABILITY

By virtue of their upward-action, Kinnear Doors are out of the way, less subject to damage from moving objects, wind and elements. But still more important, as designed by experienced door engineers, no point has been overlooked in fabricating a door that will best withstand the effects of the elements and hard, rough usage. Because of their inherent durability and Kinnear's nation-wide servicing organization, maintenance cost is negligible.

The Columbus Incinerator, on which seven Kinnear Doors are installed . . . five Steel Rolling Doors, chain operated, ranging from 16 to 22 ft. in width and from 8 ft. 4 in. to 10 ft. 6 in. in height; and two special panelled Steel Bifolding Doors 10x10 ft. in size



4. FIRE PROTECTION

Kinnear Metal Rolling Doors are fire resisting, providing an effective guard in case of fire. When fire protection is of primary importance the use of Kinnear Automatic Labeled Rolling Doors reduces insurance premiums substantially. Besides endorsement by the Underwriters as a fire door and bearing their label, they can also be used for service purposes, providing customary Kinnear economies of operation.

5. MAXIMUM SAFETY

Kinnear Doors are built with a high factor of safety throughout. Strength and quality are in excess of mechanical requirements. Springs are individually tested. Automatic Doors are provided with a safety drop governor, retaining locks and other special safety features for the protection of human life and property.

6. WEATHER GUARD

Through the use of special endlocks, sealing devices and accurately fabricated parts, Kinnear Doors are made weathertight at all joints. Curtain or panels are of weather resisting materials and given a high grade protective coating.

7. ECONOMICAL INSTALLATION

Kinnear Doors are designed to be installed with the minimum preparation of the opening. The form in which doors are shipped facilitates rapid and economical erection.

8. NEAT APPEARANCE

Curtain or panels are of neat design. All mechanism is neatly arranged, with concealed parts wherever possible. Open or closed, Kinnear Doors give the opening a clean-cut appearance and can be designed to harmonize with the architectural treatment of the building.

9. THEFT-PROOF

Strongly built and with provisions for locking, Kinnear Doors are dependable guards against thieves, marauders and rioters.

One of hundreds of cases where buildings equipped with positive automatic closing Kinnear Fire Shutters were saved from fire in adjoining buildings. Hollywood Telephone Exchange, Hollywood, California

A COMPLETE DOOR SERVICE

What it means to Architects, Contractors and Owners

To specify Kinnear Doors means more than the selection of a superior product . . . it is your assurance of a complete door service. The Kinnear Organization assumes responsibility at the time they are delegated to study the opening problem. A staff of experienced door Engineers design the door to most efficiently meet the conditions of the particular requirements. For every Kinnear Door is individually tailored for the job.

After the design has been approved the door is built by experienced door mechanics in the largest and best equipped plant in the industry. When ready for installation, Kinnear Trained Erection Crews are available to see that it is properly installed and put in perfect operation. When this has been accomplished, only Kinnear's initial responsibility has been realized.

For Kinnear still remains on the job, from standpoint of service. Records and patterns of every Kinnear Door sold are kept in fireproof vaults. Consequently, a Kinnear Door is never an orphan. In case of accidental damage, genuine parts can be promptly supplied . . . and because of Kinnear's design, replacements can be easily and economically made.

Experience has shown that an orphan door is like an orphan car. It quickly loses its value. It cannot give satisfactory service with make-shift parts. And many orphaned doors are worthless because of the complete inability to secure replacement parts.

Through a nation-wide service organization, Kinnear is as close as your telephone, and will always be found to be equally interested in servicing present installations as to sell new doors.

TO ARCHITECT

Besides operating efficiency and economy, Kinnear Doors offer the compactness, safety and simplicity that is vital to the Architect in designing and specifying equipment. Frequently the Architect does not have the time for making exhaustive studies and tests of a product, so finds it necessary to rely on the experience and integrity of the source of supply. Consequently, the long service records of Kinnear Doors have provided a reputation sufficiently reliable to permit him to readily specify "Kinnear." And when he insists that his specifications be followed he has the assurance a superior device is being used . . . one on which performance has shown that the first cost is generally the final cost. Architects also highly regard the co-operation and assistance Kinnear Engineers offer, in the solution of door problems.

A study of the specifications of the country's foremost projects reveals that leading Architects have predominate preference for Kinnear Doors.

Scope of Kinnear Service

1. Branch Offices and Sales Representatives, trained and experienced in door engineering, strategically located throughout United States and many foreign countries.
2. Study of your opening problem to determine your exact requirements.
3. Staff of experienced door engineers prepare drawings of doors to meet your individual needs.
4. Doors are carefully fabricated in a completely equipped plant by experienced mechanics, and of the finest quality materials.
5. Erection Service by trained workmen.
6. Maintenance of records and patterns of every Kinnear Door installed makes replacement parts always available in case of accidental damage.
7. Nation-wide service organization.
8. Every door is backed by the integrity of a company which has faithfully served the public for the best part of a half century.

TO CONTRACTOR

Quick and accurate estimates, accurate designs and working drawings, entire co-operation of a trained construction crew at the time of installation in complying with the building procedure plan, are a few of the reasons Kinnear Doors have won such favor with Contractors. By being relieved of the responsibility of speedy and proper installation they have learned that by accepting the Kinnear bid they are money ahead . . . not to mention the value to their reputation, by affording the Architect and Owner the greatest ultimate satisfaction.

TO OWNER

Every advantage Kinnear Doors afford is naturally of interest to the Owner. But even more important than the numerous operating economies, is the fact that the first cost of Kinnear Doors is generally the final cost. Inherently durable, they give years of uninterrupted, efficient service. This is evidenced by hundreds of doors that are still in daily service after more than 30 years of hard usage. If a door purchase is to represent a sound investment, the performance of Kinnear Doors, coupled with Kinnear's permanently available replacement service for cases of accidental damage, cannot be overlooked.

The Kinnear Designing Department. This corps of trained and experienced door engineers are maintained at all times for designing every Kinnear Door to meet the individual need

The Kinnear Trained Erection Crew at work. Their experience in the proper installation of doors relieves the purchaser of all erection responsibility and is a service many Kinnear buyers are specifying

STEEL ROLLING SERVICE DOORS

GENERAL CONSTRUCTION

Kinnear Steel Rolling Doors and Shutters are sold under two distinct classifications, viz: Service Doors that are designed for openings which do not require an Underwriters' label, and where insurance is not a consideration; and Automatic Doors which are built for places where the protection of human life and property against fire is of prime importance. However, the Service Doors described here, by the very nature of their construction are fire-repellant and afford a certain amount of fire protection. Details of the Fire Door will be found on pages 12 to 16 inclusive.

The curtain proper is made of open hearth, copper-bearing steel interlocking slats heavily galvanized by the Kinnear Tite-Cote hot process (also of pure iron, stainless steel, aluminum, bronze, and other metals) and equipped with endlocks of suitable material. This curtain is coiled upon a barrel journalled in heavy cast iron brackets and travels in steel guides mounted on the side of the opening. Helical springs enclosed in the barrel provide perfect counterbalance. A hood of suitable design and metal is furnished for covering the barrel and coil.

To fully understand the designing skill and the high quality materials and workmanship put in this renowned door, see pages 6 and 7. Though built to this high standard, every Kinnear Door is especially tailored to meet the individual requirement . . . no doors being carried in stock.

In case the type of door suited to your exact needs is not illustrated in this catalog, write Kinnear Engineers for special recommendations. Those illustrated are only the types in most general use.

METHODS OF OPERATION

The methods of operation most commonly used in Kinnear Steel Rolling Doors are:

Push-up—Manually opened and closed by means of handles in bottom plate. (Not recommended for doors exceeding 80 sq. ft. in area.)

Chain—Mechanically operated by hand chain, sprocket and reduction gearing.

Crank—Mechanically operated by hand crank, shafting and reduction gearing.

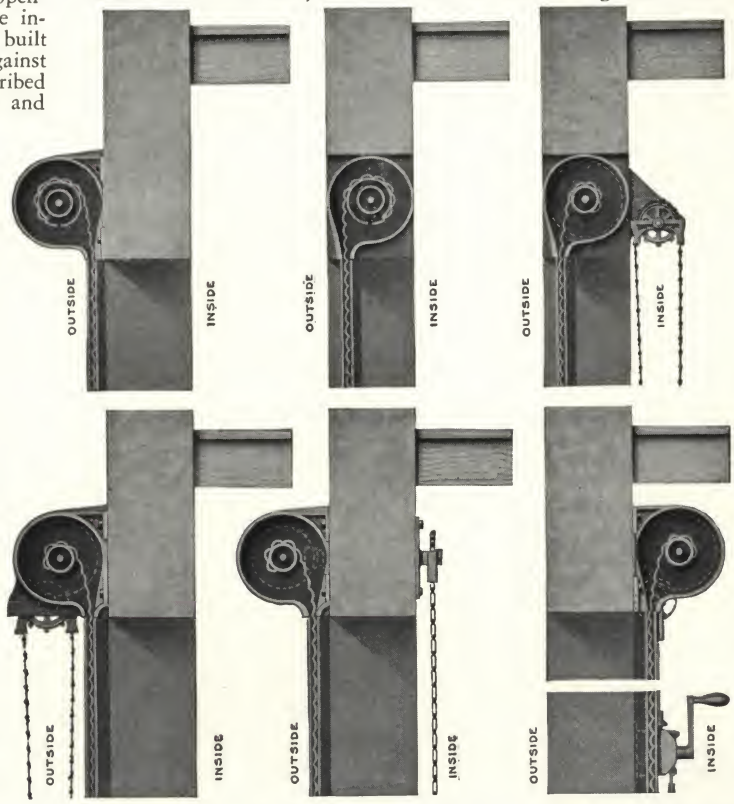
Power—Driven by electric motor, controlled by one or more conveniently located push buttons or photo-electric control stations.

Easy and rapid operation of Kinnear Service Doors is obtained by careful calculation of size of spring employed in counterbalancing, the liberal use of annular roller and thrust bearings, machine molded gears and other refinements of this character. Springs are carefully tested before being applied to doors.

The selection of the type of operation is usually determined by the size of door and service required.

INSTALLATION

The illustration below shows the most common methods of installing Kinnear Steel Rolling Doors. When the coil is mounted on the face of the wall, as in the case of old buildings and where headroom is ample, the brackets and coil are entirely above the bottom of the lintel and the edges of the guides are flush with the face of the opening jambs. Where headroom is limited, the door is then mounted in the opening, in which case the brackets and coil are located on the jambs or in reveals provided in the jambs.



If Kinnear Engineers have the opportunity to work with the Architect and Engineer during the designing period of the job, it is frequently possible to conceal all working parts of the door, making the curtain when in the closed position, the only visible part. The door may be encased by wood, marble, bronze and other materials when appropriate.

A Kinnear Steel Rolling Door for a crane opening in the Charleston Navy Yards. 25 ft. wide by 31 ft. high.

Part of the Battery of 119 Kinnear Doors installed in St. John's Terminal, New York City. Consider the tremendous amount of space saved by their upward operation.

KNOWN FOR LASTING SERVICE

. . . . . *and Here are the Reasons*

Like the motor in your car or the works in your watch, a considerable portion of the dollar value of a Kinnear Steel Rolling Door is not visible. The following points, therefore, are given in order that the discriminating and economical purchaser can see the many exclusive and cleverly designed construction features hidden under its hood. Numbers correspond to those on the drawing on the opposite page.

1. Brackets—Uniformly cast in special moulds, eliminating variations found in sheet steel types. All surfaces are smooth and even. Metal of gray iron of uniform texture with high-test value and suitably proportioned with large factor of safety. Bracket mouth and stops are cast integral, at an established distance between center and back of bracket, thus providing a throat which permits smooth operation without friction and eliminates the excessive drag of curtain over the stops.

Bearings of large proportions are provided for barrel spindles.

2. Hoods—Neatly formed hot galvanized sheet steel hoods to fit contour of brackets provide complete housing for curtain coil. Hood is attached to the bracket flanges with heavy screws and is suitably reinforced with beads or flanges to prevent deflection.

3. Curtain—Composed of interlocking slats of hot galvanized copper-bearing steel, rolled in specially designed machines, in order to provide exactly formed hinged joints. These joints are especially designed to provide free and easy hinging and to shed water from the curtain. Slats are formed of suitable sections to permit uniform coiling on the spring barrel and operate freely in the curtain guides.

Endlocks are furnished attached to edges of curtain to hold curtain in alignment and prevent slats from rubbing and wearing against guides.

4. Spring Barrel—Each door is provided with a heavy steel barrel of sufficient diameter and thickness to avoid deflection in excess of .03 inches per lineal feet of barrel.

This barrel serves a three-fold purpose, viz:

1. Encases the counterbalancing mechanism.
2. Serves as the load carrying beam.
3. Provides an axis around which curtain coils.

5. Counterbalance—Oil-tempered helical springs wound from especially heat-treated steel and tempered with oil, providing a permanent and simple means of counterbalance. Each one of these springs is individually tailored and tested for each job.

6. Rings—Rings of malleable iron of special involute shape, designed to coil the curtain with a uniformly increasing diameter. Size adaptable to provide an initial diameter sufficient to insure uniform and constant counterbalance for all points of the door travel.

7. Shafting or Tension Rod—Of sufficient size to carry the torsional load of the spring counterbalance and to be of cold rolled polished steel in order to eliminate friction in all bearings.

8. Barrel Plugs—Heavy cast iron plugs machined to fit perfectly into the ends of barrel and having Kinnear special design for holding the ends of the spring and eliminating the usual excessive strain at the spring ends. The life of the Kinnear counter-balancing unit is greatly increased by this special attachment, as the danger of a fracture, which usually occurs at the spring connection, is particularly minimized.

9. Reduction Gearing—Suitable reduction gearing cast with teeth, machine molded from machine finished patterns. Designed with a high factor of safety and reduction ratio individually suited for operating the door at the maximum speed consistent with the minimum effort.

10. Chain Guard—Sprocket wheel provided with a guard, especially designed to properly guide and prevent hand chain from leaving the wheel.

11. Operating Chain—Heavily galvanized, and of design and strength to prevent stretching and to provide a comfortable hand grip.

12. Guides—Fabricated from structural steel angles. The Kinnear guide is designed with groove depths varying from 2 to 8 inches, depending upon the width of the door. This guide is especially adaptable for doors exposed to heavy wind pressure and is packed out from the face of the wall in order to accommodate the especially designed throat of the bracket.

13. End Locks—Made of malleable iron and placed on alternate slats. For retaining slats in place, protecting them against rubbing in the guides and to maintain the curtain in alignment.

14. Bottom Bar—Fabricated from structural steel angles. Bottom bars are especially designed to reinforce the curtain against wind pressure and are made with two angles of equal weight, instead of one, in order that they balance and hang freely on the curtain to eliminate binding friction in the guides. This bar provides contact for the curtain against the sill when the door is closed and against the stops on the bracket when the door is open, retaining the bottom of the curtain in a correct position suitable to the initial movement in operation.

15. Slats—Made of different sizes to accommodate the width of the door. Slats are designed to have a high crown to provide rigidity. The hinging centers are so arranged to give free action in the curtain and to properly nest when coiled on the barrel. Standard slats are rolled from copper-bearing steel and hot galvanized. The gauge of metal used in the slats depends upon the width of the opening. In every instance the size and gauge of slat is selected to best meet customer's requirements.

Slats can be furnished, when desired, in stainless steel, aluminum, bronze or copper.

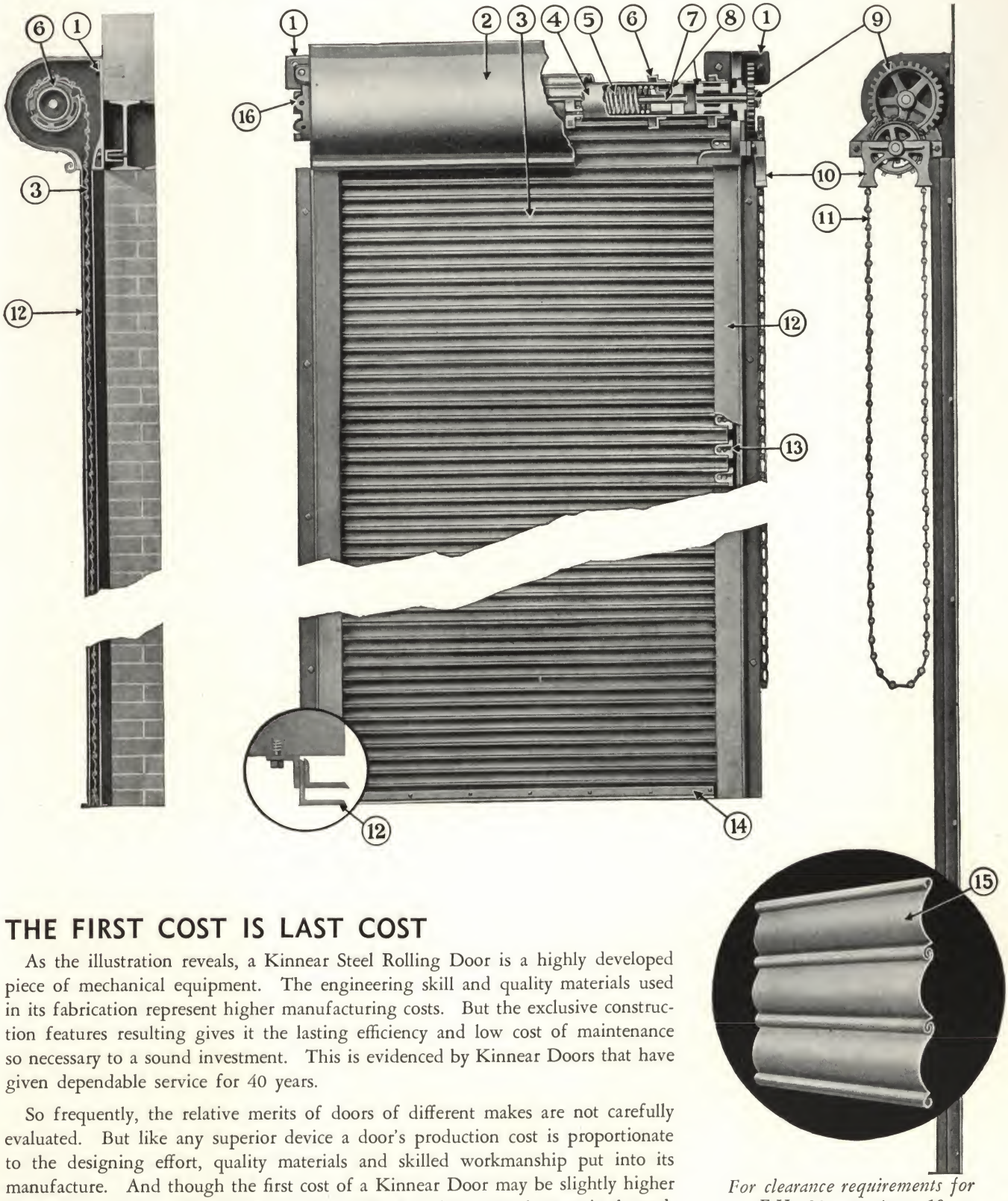
16. Adjustment Wheel—Mounted on the outside of the bracket, in order to be easily accessible. Kinnear counterbalance is so designed that the initial tension can be increased or decreased by use of this wheel, which is mounted on the tension rod. It is of heavy cast iron construction and locked to the bracket after adjustments are made.

Grain handling facilitated by this 95-ft. high Kinnear Steel Rolling Door installed in a marine tower for the Fairport Warehouse and Elevator Company, Fairport, Ohio. An example of Kinnear's ability to handle tough jobs

Illustrating how Kinnear Doors harmonize with any modern architectural design. Through the use of various metals, very attractive effects can be obtained

A battery of Kinnear Steel Rolling Doors installed for the Frankford Grocery Co., Philadelphia, Pa. Conserving space and operating rapidly, these doors facilitate quick handling of merchandise

F.H. 20—CHAIN HOIST TYPE—FACE WALL MOUNTING



THE FIRST COST IS LAST COST

As the illustration reveals, a Kinnear Steel Rolling Door is a highly developed piece of mechanical equipment. The engineering skill and quality materials used in its fabrication represent higher manufacturing costs. But the exclusive construction features resulting gives it the lasting efficiency and low cost of maintenance so necessary to a sound investment. This is evidenced by Kinnear Doors that have given dependable service for 40 years.

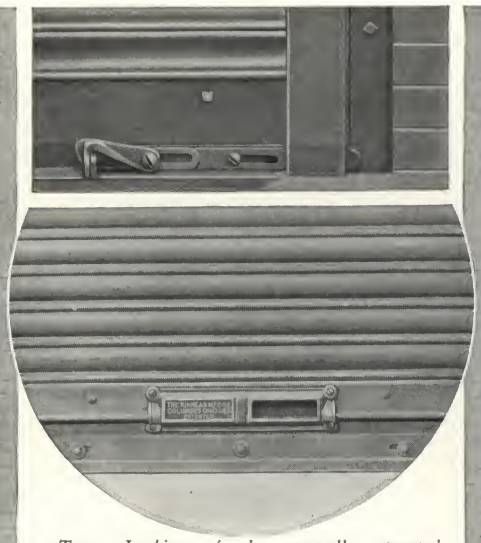
So frequently, the relative merits of doors of different makes are not carefully evaluated. But like any superior device a door's production cost is proportionate to the designing effort, quality materials and skilled workmanship put into its manufacture. And though the first cost of a Kinnear Door may be slightly higher than cheaper designs, the ultimate service it affords makes it the cheapest in the end.

For clearance requirements for F.H. 20, see page 10

F.M. 10

HAND LIFT TYPE—FACE MOUNTING

Mounted on face of wall with coil above bottom of lintel. Requiring very little alteration of the opening, it is particularly adapted to existing buildings. Manual push-up type. Spring counterbalanced. Curtain of interlocking slats. Operable from inside or outside. Provided with lock bar. Hood for coil furnished. Not recommended for sizes exceeding 80 sq. ft. in area.



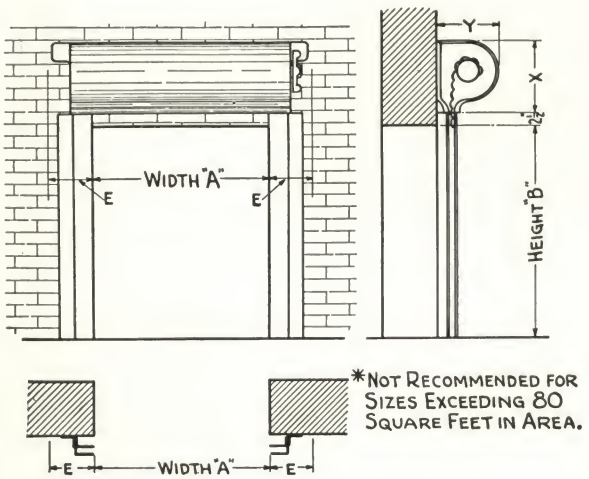
Top: *Locking of the manually operated doors is accomplished by padlocking the slide bolt, which contacts a stop in the guide, to the clip welded on the bottom plate of the door. This can be arranged for locking on either, or both sides of the door.*

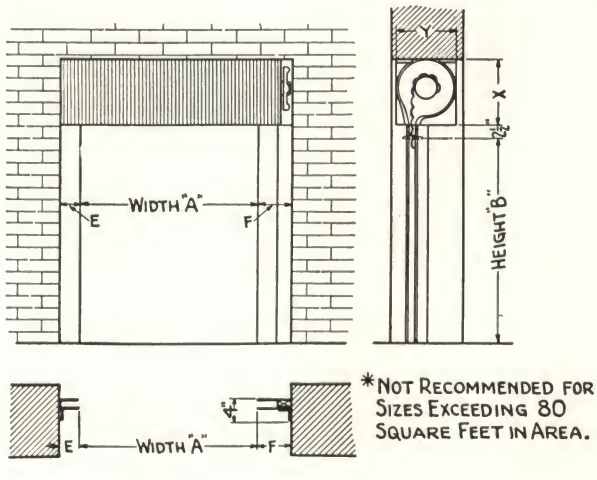
Above: *Showing the convenient lifting handle provided on the bottom plate of all manually operated push-up doors.*

B.M. 10

HAND LIFT TYPE—UNDER LINTEL MOUNTING

Mounted in opening with brackets mounted on the jambs or in reveals provided in jambs. Used where sufficient headroom is not available and in new buildings, and where it is desirable to conceal the mechanism. Manual push-up type, spring counterbalanced. Curtain of interlocking slats. Operable from either side. Provided with lock bar. Paneled hoods can be furnished at small additional cost.





F.M. 10. CLEARANCE DIMENSIONS, INCHES

Height B, Ft.		6			7			8			9			10			11			12		
		X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E
Width A, Feet	3	13	12	6	14	13	6	14	13	6	17	16	6	17	16	6	17	16	6	18	17	6
	4	13	12	6	14	13	6	14	13	6	17	16	6	17	16	6	17	16	6	18	17	6
	5	13	12	6	14	13	6	14	13	6	17	16	6	17	16	6	17	16	6	19	18	6
	6	13	12	6	14	13	6	16	15	6	17	16	6	17	16	6	19	18	6	19	18	6
	7	13	12	6	14	13	6	16	15	6	17	16	6	19	18	6	19	18	6	19	18	6
	8	13	12	6	14	13	6	16	15	6	19	18	6	19	18	6	19	18	6			
	9	13	12	6	16	15	6	18	17	6	19	18	6	19	18	6						
	10	13	12	6	16	15	6	18	17	6	19	18	6	19	18	6						
	11	13	12	6	16	15	6	18	17	6	19	18	6									
	12	13	12	7	16	15	7	18	17	7	19	18	7									

B.M. 10. CLEARANCE DIMENSIONS, INCHES

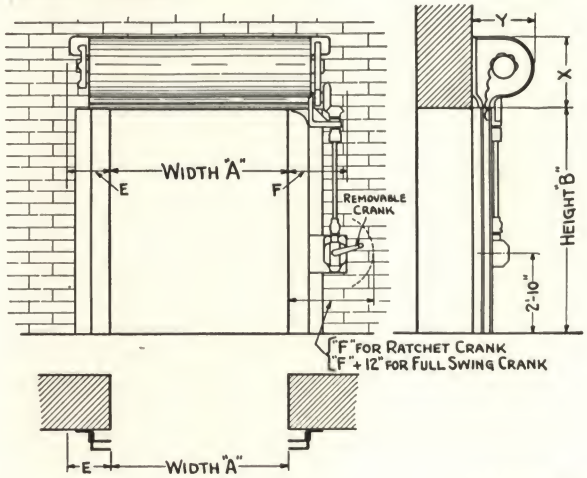
Height B, Feet		6				7				8				9				10				11				12			
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Feet	3	14	11	3	4	15	13	3	4	15	13	3	4	17	15	3	4	18	16	3	4	18	16	3	4	18	16	3	4
	4	14	11	3	4	15	13	3	4	15	13	3	4	17	15	3	4	18	16	3	4	18	16	3	4	18	16	3	4
	5	14	11	3	4	15	13	3	4	15	13	3	4	17	15	3	4	18	16	3	4	18	16	3	4	20	18	3	4
	6	14	11	3	4	15	13	3	4	17	14	3	4	17	15	3	4	18	16	3	4	20	18	3	4	20	18	3	4
	7	14	11	3	4	15	13	3	4	17	14	3	4	17	15	3	4	19	17	3	4	20	18	3	4	20	18	3	4
	8	14	11	3	5	15	13	3	5	17	14	3	5	19	17	3	5	19	17	3	5	20	18	3	5	20	18	3	5
	9	14	11	3	5	17	14	3	5	18	16	3	5	19	17	3	5	19	17	3	5	20	18	3	5	20	18	3	5
	10	14	11	3	5	17	14	3	5	18	16	3	5	19	17	3	5	19	17	3	5	20	18	3	5	20	18	3	5
	11	14	11	3	5	17	14	3	5	18	16	3	5	19	17	3	5	19	17	3	5	20	18	3	5	20	18	3	5
	12	14	11	4	5	17	14	4	5	18	16	4	5	19	17	4	5	19	17	4	5	20	18	4	5	20	18	4	5

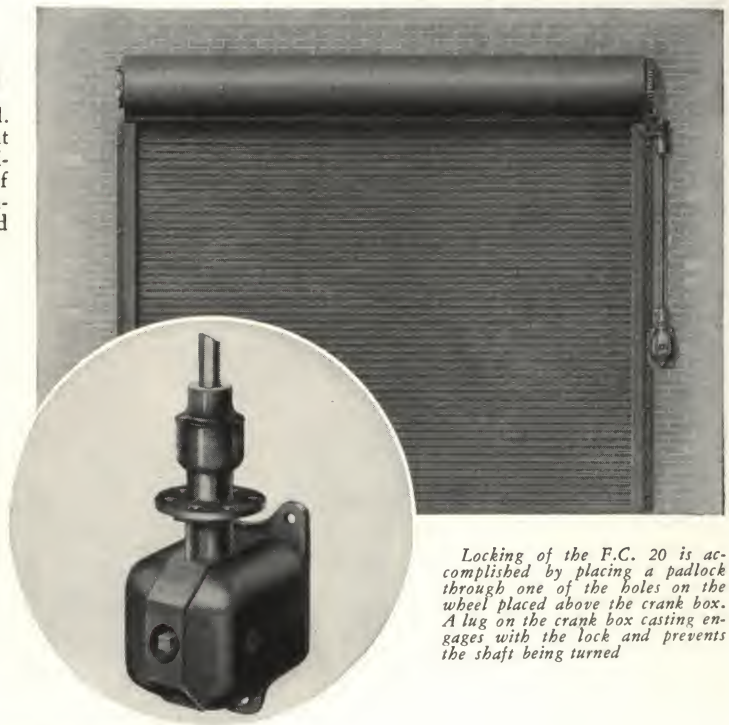
Note: For doors of intermediate sizes, use clearance dimensions listed for next larger width or height.

F.C. 20

CRANK SHAFT TYPE—FACE MOUNTING

Mounted on face of wall, with coil above bottom of lintel. Operable by hand crank, shafting and gear. Standard equipment provides for operation on door side of wall only. At small additional cost, door can be arranged to operate from both sides of wall or only from side of wall opposite door. Crank is detachable for preventing door from being operated. Sheet metal hood for coil furnished.





Locking of the F.C. 20 is accomplished by placing a padlock through one of the holes on the wheel placed above the crank box. A lug on the crank box casting engages with the lock and prevents the shaft being turned

F.C. 20. CLEARANCE DIMENSIONS, INCHES

Height B, Ft.	8			9			10			11			12			13			14			15			16			17			18			19			20			21			22			23			24		
	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F	X	Y	E F
6	12	11	6 11	13	12	6 11	13	12	6 11	14	12	6 11	15	14	6 11	16	14	6 11	16	14	6 11	16	15	6 11	16	15	6 11																				
7	12	11	6 11	13	12	6 11	13	12	6 11	14	12	6 11	15	14	6 11	16	14	6 11	16	14	6 11	16	15	6 11	16	15	6 11																				
8	12	11	6 11	13	12	6 11	13	12	6 11	14	13	6 11	15	14	6 11	16	14	6 11	16	14	6 11	16	15	6 11	16	15	6 11																				
9	12	11	6 11	13	12	6 11	13	12	6 11	14	13	6 11	15	14	6 11	16	14	6 11	16	14	6 11	16	15	6 11	16	15	6 11																				
10	12	11	6 11	13	12	6 11	13	12	6 11	14	13	6 11	15	14	6 11	16	14	6 11	16	14	6 11	16	15	6 11	16	15	6 11	17	16	6 11	21	19	6 11	21	20	6 11	21	20	6 11	21	20	6 11	24	22	8 11	24	22	8 11	26	24	8 11
11	12	11	6 11	13	12	6 11	13	12	6 11	14	13	6 11	15	14	6 11	16	14	6 11	16	14	6 11	16	15	6 11	16	15	6 11	17	16	6 11	21	19	6 11	21	20	6 11	21	20	6 11	24	22	8 11	24	22	8 11	24	22	8 11	26	24	8 11
12	13	12	7 12	13	12	7 12	13	12	7 12	14	13	7 12	15	14	7 12	16	14	7 12	16	14	7 12	16	15	7 12	16	15	7 12	17	16	7 12	21	19	6 11	21	20	6 11	21	20	6 11	24	22	8 11	24	22	8 11	24	22	8 11	26	24	8 11
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14	16	14	6 11	16	14	6 11	17	16	6 11	17	16	6 11	17	16	6 11	19	18	6 11	19	18	6 11	19	18	6 11	19	18	6 11	21	19	6 11	21	19	6 11	21	20	6 11	24	22	8 11	24	22	8 11	24	22	8 11	24	22	8 11	26	24	8 11
15	16	14	7 12	16	14	7 12	17	16	7 12	17	16	7 12	17	16	7 12	19	18	7 12	19	18	7 12	19	18	7 12	19	18	7 12	21	20	7 12	21	20	7 12	21	20	7 12	24	22	8 12	24	22	8 12	24	22	8 12	26	24	8 12	26	24	8 12
16	16	14	7 12	16	14	7 12	17	16	7 12	18	17	7 12	18	17	7 12	19	18	7 12	19	18	7 12	19	18	7 12	21	20	7 12	21	20	7 12	21	20	7 12	21	20	7 12	24	22	8 12	24	22	8 12	26	24	8 12	26	24	8 12	26	24	8 12
17	16	15	7 12	17	16	7 12	17	16	7 12	18	17	7 12	18	17	7 12	19	18	7 12	19	18	7 12	21	20	7 12	21	20	7 12	21	20	7 12	21	20	7 12	24	22	8 12	24	22	8 12	24	22	8 12	26	24	8 12	26	24	8 12	26	24	8 12
18	16	15	7 13	17	16	7 13	17	16	7 13	18	17	7 13	18	17	7 13	19	18	7 13	19	18	7 13	21	20	7 13	21	20	7 13	21	20	7 13	21	20	7 13	24	22	9 13	24	22	9 13	24	22	9 13	26	24	9 13	26	24	9 13	26	24	9 13
19	16	15	7 13	17	16	7 13	17	16	7 13	18	17	7 13	18	17	7 13	21	19	7 13	21	19	7 13	21	20	7 13	21	20	7 13	21	20	7 13	21	20	7 13	24	22	9 13	24	22	9 13	24	22	9 13	26	24	9 13	26	24	9 13	27	25	9 13
20	16	15	7 13	17	16	7 13	17	16	7 13	18	17	7 13	18	17	7 13	21	19	7 13	21	19	7 13	21	20	10 16	21	20	10 16	24	22	10 16	24	22	10 16	24	22	10 16	24	22	10 16	24	22	10 16	24	22	10 16	26	24	10 16	27	25	10 16
21	16	15	7 13	17	16	7 13	17	16	7 13	19	18	7 13	21	19	7 13	21	19	7 13	21	20	7 13	21	20	10 16	24	22	10 16	24	22	10 16	24	22	10 16	24	22	10 16	24	22	10 16	24	22	10 16	26	24	10 16	27	25	10 16	27	25	10 16
22	16	15	7 13	17	16	7 13	17	16	7 13	19	18	7 13	21	19	7 13	21	19	7 13	21	20	7 13	21	20	10 16	24	22	10 16	24	22	10 16	24	22	10 16	24	22	10 16	24	22	10 16	24	22	10 16	27	25	10 16	27	25	10 16	27	25	10 16
23	16	15	8 14	17	16	8 14	17	16	8 14	19	18	8 14	21	19	8 14	21	19	8 14	21	20	8 14	21	20	11 16	24	22	11 16	24	22	11 16	24	22	11 16	24	22	11 16	24	22	11 16	26	24	11 16	27	25	11 16	27	25	11 16	27	25	11 16

Width A, Ft.

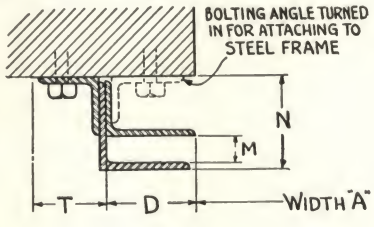
Note: For doors of intermediate sizes, use clearance dimensions listed for next larger width or height.
Slat No. 2 used on doors of sizes listed above heavy line. Slat No. 4 used on doors of sizes listed below heavy line.

SLATS

No. 2 Slat—Used on average size door. Rolled from 22, 20, 18, and 16 U. S. gauge open hearth copper-bearing steel, hot galvanized. $\frac{9}{16}$ in. depth of crown.

No. 4 and No. 10 Slat—Used on extremely wide doors. Rolled from 20, 18, and 16 U. S. gauge. $\frac{7}{8}$ in. depth of crown.

Note: Schedule below gives guide clearances required and slat required for doors of various widths.

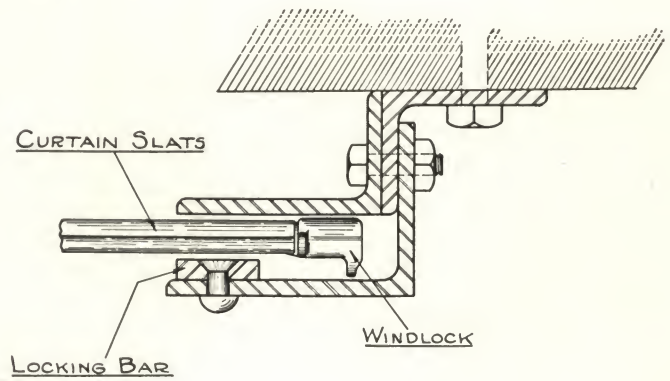


SCHEDULE OF CLEARANCES FOR TYPICAL CURTAIN GUIDE

	Width-A, ft.	D, in.	M, in.	N, in.	T, in.
Slat No. 2	to 7 incl.	2	$\frac{7}{8}$	3 $\frac{1}{2}$	2 $\frac{1}{2}$
	over 7 to 11 incl.	2 $\frac{1}{2}$	$\frac{7}{8}$	3 $\frac{1}{2}$	2 $\frac{1}{2}$
	over 11 to 14 incl.	3	$\frac{7}{8}$	3 $\frac{1}{2}$	2 $\frac{1}{2}$
Slat Nos. 4 and 10	to 14 incl.	2 $\frac{1}{2}$	1 $\frac{1}{8}$	5	2 $\frac{1}{2}$
	over 14 to 17 incl.	3	1 $\frac{1}{8}$	5	2 $\frac{1}{2}$
	over 17 to 22 incl.	3 $\frac{1}{2}$	1 $\frac{1}{8}$	5	2 $\frac{1}{2}$
	over 22 to 24 incl.	4	1 $\frac{1}{8}$	5	3
	over 24 to 32 incl.	6	1 $\frac{5}{8}$	6	4
	over 32 to 40 incl.	8	1 $\frac{5}{8}$	6	4

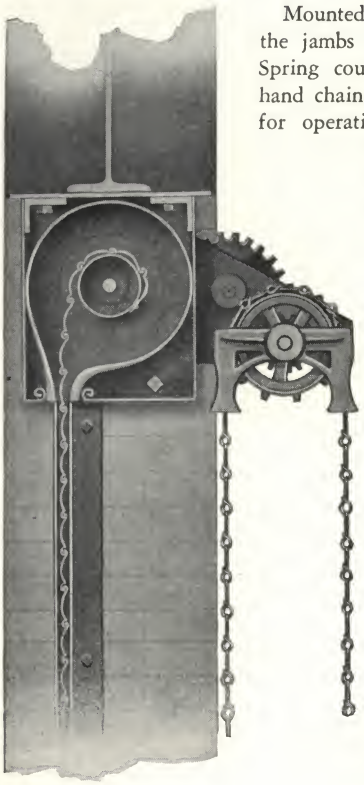
WINDLOCKS

Illustration shows how endlocks are designed with lug, which engages with a locking bar attached to the guide. This prevents curtain from leaving guide because of deflection from tremendous wind pressure or other forces. Provided wherever door is to be subject to extreme wind pressure. Otherwise type of endlock shown on page 7 is used.

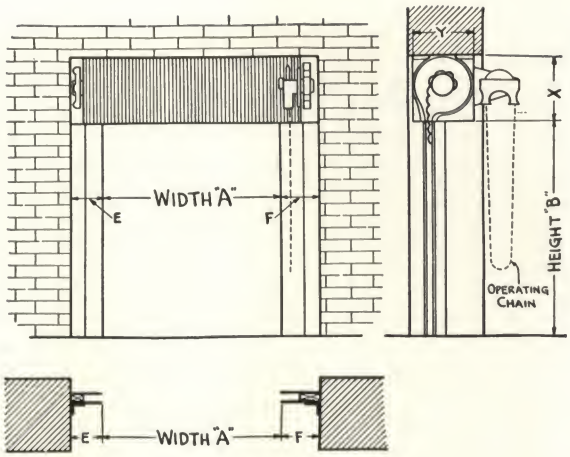


B.H. 20

CHAIN HOIST TYPE—UNDER LINTEL MOUNTING



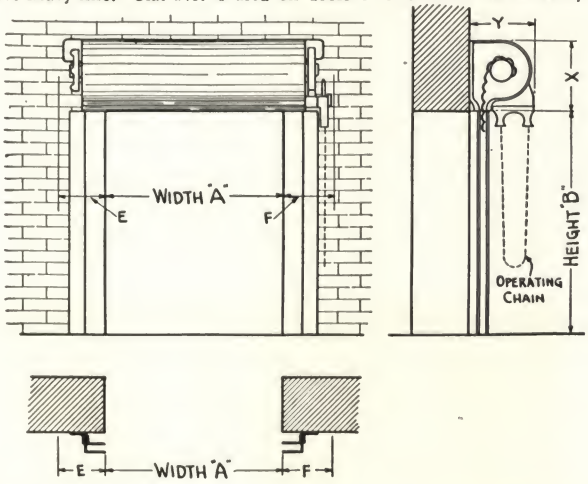
Mounted in opening with brackets mounted on the jambs or in reveals provided in the jambs. Spring counterbalanced. Operated by means of hand chain, sprocket and gear. Can be arranged for operation from either side of wall. Curtain of interchangeable, interlocking slats. Keeper for locking chain to jamb is furnished.



B.H. 20. CLEARANCE DIMENSIONS, INCHES

Height B, ft.		8				9				10				11				12				13				14				15				16			
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Ft.	6	13	10	4	5	14	11	4	5	14	11	4	5	14	12	4	5	16	13	4	5	17	14	4	5	17	14	4	5	17	14	4	5	17	15	4	5
	7	13	10	4	5	14	11	4	5	14	11	4	5	14	12	4	5	16	13	4	5	17	14	4	5	17	14	4	5	17	14	4	5	17	15	4	5
	8	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	14	5	6	17	15	5	6
	9	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	14	5	6	17	15	5	6
	10	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	14	5	6	17	15	5	6
	11	13	10	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	14	5	6	17	15	5	6
	12	14	11	5	6	14	11	5	6	14	11	5	6	16	12	5	6	16	13	5	6	17	14	5	6	17	14	5	6	17	14	5	6	17	15	5	6
	13	14	12	5	6	16	12	5	6	16	12	5	6	16	13	5	6	16	13	5	6	17	14	6	8	17	14	6	8	17	15	6	8	18	15	6	8
	14	16	13	5	6	16	14	5	6	18	15	5	7	19	16	5	7	19	16	5	7	19	16	5	7	19	17	5	7	19	17	5	7	20	18	5	7
	15	16	14	5	6	17	14	5	6	18	15	6	8	19	16	6	8	19	16	6	8	19	16	6	8	19	17	6	8	19	17	6	8	20	18	6	8
	16	16	14	5	6	17	14	5	6	18	15	6	8	19	16	6	8	19	16	6	8	19	16	6	8	19	17	6	8	19	17	6	8	22	19	6	8
	17	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	19	16	6	8	19	16	6	8	19	17	6	8	22	19	6	8	22	19	6	8
	18	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	19	16	6	8	19	16	6	8	19	17	6	8	22	19	6	8	22	19	6	8
	19	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	19	16	6	8	22	19	6	8	22	19	6	8								
	20	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	19	16	6	8	22	19	6	8	22	19	6	8								
	21	17	15	6	8	18	15	6	8	18	15	6	8	20	18	6	8	22	19	6	8	22	19	6	8	23	20	6	8								
	22	17	15	6	8	18	15	6	8	18	15	6	8	20	18	6	8	22	19	6	8	22	19	6	8	23	20	6	8								
	23	17	15	7	9	18	15	7	9	18	15	7	9	20	18	7	9	22	19	7	9	22	19	7	9	23	20	7	9								

Note: For doors of intermediate sizes, use clearance dimensions listed for next larger width or height.
Slat No. 2 used on doors of sizes listed above heavy line. Slat No. 4 used on doors of sizes listed below heavy line.



F.H. 20

CHAIN HOIST TYPE—FACE MOUNTING

Illustration of F.H. 20 shown on page 7. Mounted on face of wall with coil above bottom of lintel. Operated by hand chain, sprocket and gear. Spring counterbalanced. Arranged for operation from door side of wall only. Where operation from opposite wall is desired, call for F.H. 61, on which gearing is on shaft which extends through the wall. Curtain of interchangeable interlocking slats. Sheet metal hood for coil furnished. Provision for locking chain to jamb.

F.H. 20. CLEARANCE DIMENSIONS, INCHES

Height B, Ft.		8				9				10				11				12				13				14				15				16			
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Ft.	6	12	13	6	7	13	13	6	7	13	13	6	7	14	13	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7
	7	12	13	6	7	13	13	6	7	13	13	6	7	14	13	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7
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	9	12	13	6	7	13	13	6	7	13	14	6	7	14	14	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7
	10	12	13	6	7	13	13	6	7	13	14	6	7	14	15	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	18	6	7
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	13	14	14	7	8	14	16	7	8	14	16	7	8	15	17	7	8	15	17	7	8	16	15	7	8	16	15	7	8	16	15	7	8	16	15	7	8
	14	16	17	6	7	16	18	6	8	17	16	6	7	17	17	6	7	17	17	6	7	19	18	6	7	19	18	6	7	19	18	6	7	19	18	6	7
	15	16	17	7	8	16	18	7	8	17	16	7	8	17	17	7	8	17	17	7	8	19	18	7	8	19	18	7	8	19	18	7	8	19	18	7	8
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	18	16	15	7	8	17	16	7	8	17	16	7	8	18	19	7	8	18	19	7	8	19	18	7	8	19	18	7	8	19	18	7	8	21	20	7	8
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Height B, Ft.		17				18				19				20				21				22				23				24			
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Ft.	6																																
	7																																
	8																																
	9																																
	10	17	17	6	7	21	19	6	7	21	20	6	7	21	20	6	7	21	20	6	7	24	22	8	8	24	22	8	8	26	23	8	8
	11	17	17	6	7	21	19	6	7	21	20	6	7	21	20	6	7	24	22	8	8	24	22	8	8	24	22	8	8	26	23	8	8
	12	17	17	7	8	21	19	6	7	21	20	6	7	21	20	6	7	24	22	8	8	24	22	8	8	24	22	8	8	26	23	8	8
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	14	19	18	6	7	19	18	6	7	19	18	6	7	19	18	7	8	21	19	6	7	21	19	6	7	21	20	6	7	24	22	8	8	24	22	8	8
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	16	19	18	7	8	19	18	7	8	19	18	7	8	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	24	22	8	8	24	22	8	8
	17	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	24	22	8	8	24	22	8	8	24	22	8	8
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	22	21	19	7	8	21	20	7	8	21	20	7	8	21	20	7	8	24	22	8	8	24	22	8	8	24	22	8	8	24	22	8	8	24	22	8	8
	23	21	19	8	9	21	20	8	9	21	20	8	9	21	20	8	9	24	22	8	8	24	22	8	8	24	22	8	8	24	22	8	8	24	22	8	8

Height B, Ft.		8				9				10				11				12				13				14				15				16			
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Ft.	6	12	13	6	7	13	13	6	7	13	13	6	7	14	13	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7
	7	12	13	6	7	13	13	6	7	13	13	6	7	14	13	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7
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Height B, Ft.		17				18				19				20				21				22				23				24			
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Ft.	6																																
	7																																
	8																																
	9																																
	10	17	17	6	7	21	19	6	7	21	20	6	7	21	20	6	7	21	20	6	7	24	22	8	8	24	22	8	8	26	23	8	8
	11	17	17	6	7	21	19	6	7	21	20	6	7	21	20	6	7	24	22	8	8	24	22	8	8	24	22	8	8	26	23	8	8
	12	17	17	7	8	21	19	6	7	21	20	6	7	21	20	6	7	24	22	8	8	24	22	8	8	24	22	8	8	26	23	8	8
	13	17	18	7	8	21	19	6	7	21	20	6	7	24	22	8	8	24	22	8	8	24	22	8	8	24	22	8	8	26	23	8	8
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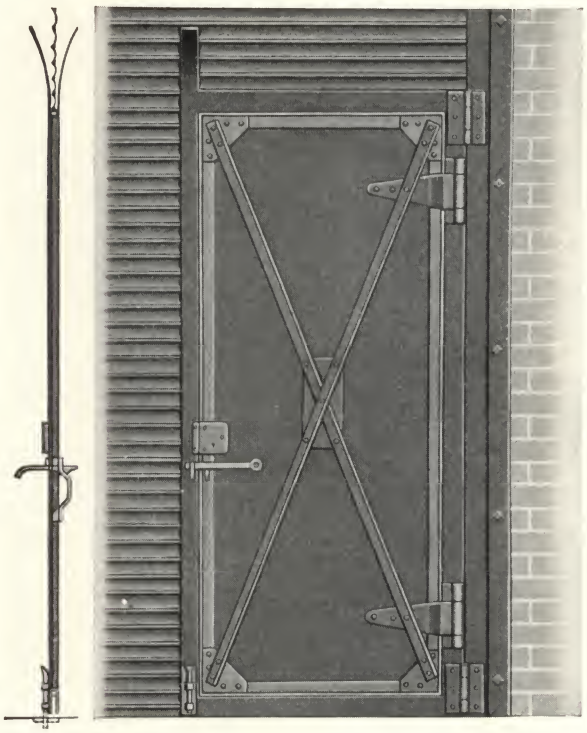
	21	21	19	7	8	21	20	7	8	21	20	7	8	21	20	7	8	24	22	8	8	24	22	8	8	24	22	8	8	24	22	8	8	24	22	8	8
	22	21	19	7	8	21	20	7	8	21	20	7	8	21	20	7	8	24	22	8	8	24	22	8	8	24	22	8	8	24	22	8	8	24	22	8	8
	23	21	19	8	9	21	20	8	9	21	20	8	9	21	20	8	9	24	22	8	8	24	22	8	8	24	22	8	8	24	22	8	8	24	22	8	8

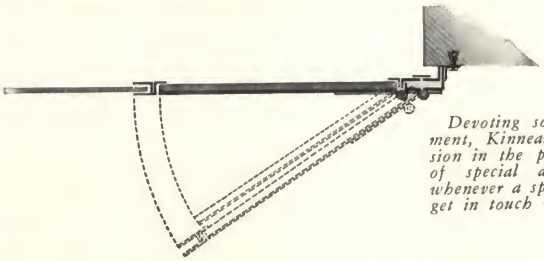
Note: For doors of intermediate sizes use clearance dimensions listed for next larger width or height.
Slat No. 2 used on doors of sizes listed above heavy line. Slat No. 4 used on doors of sizes listed below heavy line.

AUXILIARY EQUIPMENT



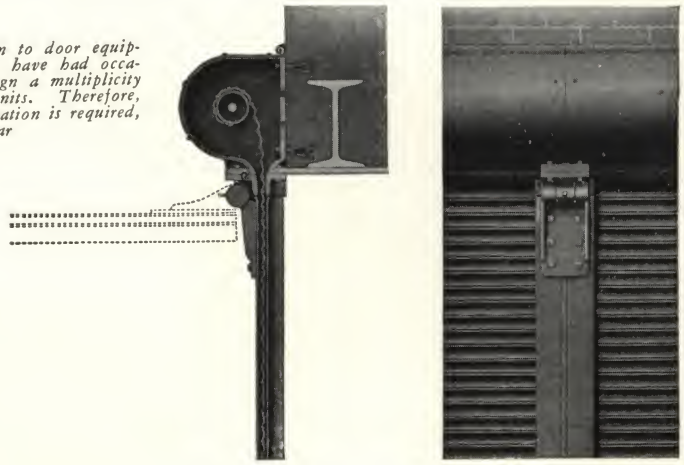
WICKET OR PASS DOOR The wicket or pass door provides an entrance without raising the major door. It is an ideal arrangement where there is no access to the building other than by the main opening. The wicket is built of an angle frame covered with a steel plate and equipped with heavy strap hinges and massive latch and lock. It is hung on a frame hinged to the side guide. The frame is constructed of angles forming grooves in which the rolling door travels. When the rolling door is raised, the wicket door and frame are swung back against the wall.

INTERMEDIATE MOVABLE POST Very wide openings can frequently be more conveniently closed by a number of doors than by a single large one, using between the doors movable posts with the edges constructed to form double grooves. Hinged to the bracket, these posts are swung up out of the way when the doors are open. Ordinarily the posts swing perpendicularly to the plane of the curtain, but can be arranged to swing obliquely; slide to the side of the opening by a trolley on a horizontal overhead track; or other methods suited to the individual needs. Details on special arrangements will be submitted upon request.

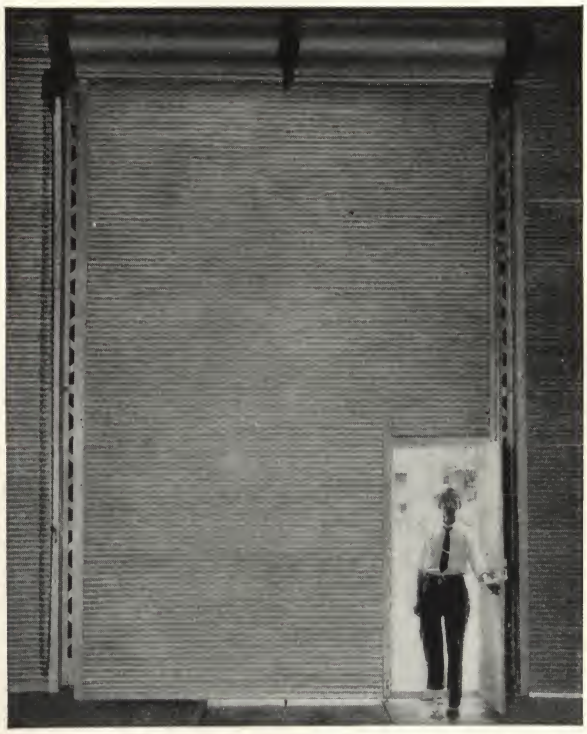


Devoting sole attention to door equipment, Kinnear Engineers have had occasion in the past to design a multiplicity of special auxiliary units. Therefore, whenever a special application is required, get in touch with Kinnear

A wicket door on a Kinnear Steel Rolling Door 11 ft. x 16 ft. 6 in. in size. One of several large doors installed for the Ohio Valley Electric Railway Company, Huntington, West Virginia. Saves time and labor of opening the main door



Showing how Pier 32, San Francisco Harbor has large openings closed with two moderate sized Steel Rolling Doors and movable Post. Posts slide on tracks to the side of the opening out of the way, when both doors are in use.



"AKBAR" FIRE DOORS

The Positive, Automatic Closing Fire Guard

Kinnear Fire Doors and Shutters are designed distinctly for fire protection purposes for openings that require Underwriters' labeled equipment and where insurance rates are a consideration. However, they are designed so they may also be used for service purposes with the same resulting economies of the service door.

Those who have made a thorough study of fire prevention realize that nothing is more inducive to the rapid spread of fire than drafts which carry the flame through passage ways and window openings. As Kinnear Fire Doors offer an automatic closure for such openings, it is unanimously agreed that they are an exceedingly practical protective device . . . an inexpensive form of insurance against the numerous losses caused by a serious fire. Their effectiveness as a fire guard has been proved in major conflagrations throughout the country . . . Kinnear equipped buildings being the only ones standing in an otherwise completely demolished area. It is false economy to neglect protection and insurance such as offered by Kinnear Fire Doors and Shutters.

WHY IT HAS NO EQUAL

In general appearance and principle of operation, the Kinnear Akbar Fire Door is similar to the Steel Rolling Service Door. But, in addition, they are provided with mechanism for positive, automatic closure in case of fire, as well as embodying numerous other construction features which make them a foremost fire protective device. The careful purchaser will find a study of the following points and the illustration on the opposite page, descriptive of an Akbar Manual Automatic Door for interior service (Class A, B and C), of exceptional interest.

1. Brackets—High test gray iron, cast in special mold, providing a high factor of safety and a smooth painting surface. Integral cast bracket mouth and stops give smooth operation, eliminating excessive drag of curtain on stops.

2. Hoods—Neatly formed from hot galvanized sheet metal of No. 24 U. S. gauge, fitted to give tight enclosure to coil. Reenforcing beads and flanges prevent deflection.

3. Curtain—Composed of interlocking slats of hot galvanized copper-bearing steel and not less than No. 20 U. S. gauge, rolled in especially constructed machines. Slats are designed to have a high crown to provide rigidity. Hinging centers so arranged to give free action in the curtain and to properly nest when coiled on the barrel.

4. Spring Barrel—To encase counterbalance mechanism. Made from heavy steel tubing or pipe of thickness and diameter particularly designed to carry the curtain load and minimize deflection, thereby preventing binding in barrel bearings. Main bearings in supporting barrel are roller bearings.

5. Counterbalance—Composed of helical springs wound from especially heat-treated steel and tempered with oil. Counterbalances individually tailored and tested on each job.

6. Rings—Rings of malleable iron of special involute shape, designed to coil the curtain with a uniformly increasing diameter. Size adaptable to provide an initial diameter sufficient to insure uniform and constant counterbalance for all points of the door travel.

7. Shafting or Tension Rod—Of sufficient size to carry the torsional load of the spring counterbalance and of cold rolled polished steel, in order to eliminate friction in all bearings.

8 & 9. Barrel Locks—The weight of the curtain is balanced by springs, but when the curtain is down in the closed position, it is also supported by the barrel lock, in order to eliminate the danger of the curtain collapsing in case the temper of the spring is lost from the excessive heat of a fire.

10 & 11. Auxiliary Retaining Wheels—These wheels are attached to the tension shaft (16) of the auxiliary spring (15). This spring (15) can, therefore, function only when the wheels (10 & 11) are free to turn after being released for automatic closure.

12. Safety Governor—This governor retains the wheels (10 & 11) and is itself held in place by the release levers (13 & 14). When these levers release the governor, it permits the wheels to revolve only at a safe speed. Therefore, the force of the auxiliary spring (15) is controlled by this governor and the curtain is forced down at a safe speed, thus eliminating any danger of personal injury to persons accidentally in the opening. The curtain closes on the floor in automatic closure, without the impact so common with the gravity closing type.

13 & 14. Release Levers—The automatic closing mechanism is retained by these levers. All contact points are either covered or made from non-corrodible metals, in order to eliminate any possible freezing together. The lever (14) is held up by fusible links (25) which release at a temperature of 160 degrees F.

15 & 16. Auxiliary Spring and Tension Rod—This spring is anchored to the tension rod, which is in turn held in place by the auxiliary wheels (10 & 11). It always carries stored-up energy sufficient for completely and positively closing the door from any position in the opening when automatically released. It has no function for normal operation and is independent of the counterbalance spring. The counterbalance spring is, therefore, unmolested when door is automatically closed.

17. Barrel Plugs—These close the ends of the barrel, carry the springs, and are of heavy cast iron, especially designed for holding the ends of the spring and eliminating the usual excessive strain at the spring ends.

18. Adjusting Wheel—This is connected to the tension rod (7), carrying the counterbalance spring and attached to the bracket opposite to the one carrying the automatic mechanism. The tension of the counterbalance spring is controlled by this wheel and the operating balance of the door can be adjusted by this wheel. As it is separated from the automatic release, it is again to be noted that the functioning of the automatic closing device does not affect the counterbalance.

19. Drop Hood or Baffle—A metal shield of the same gauge as the hood is attached to the main hood by a continuous beaded joint, permitting the shield to hinge over the curtain coil. This shield forms the drop hood and is held up out of the way by a fusible link attachment (20). In case of fire, the link melts and the drop hood drops on the coil and becomes a baffle against the passage of smoke and hot gases around through the bracket.

20. Hood Fusible Links—These links hold the drop hood or baffle out of the way during normal operation and are so distributed to provide necessary alignment of the hood. A temperature of 160 degrees F. releases the links and permits the baffle to close on the curtain coil.

21. Guides—Fabricated from structural steel of at least $\frac{3}{16}$ in. thickness. Slotted holes are provided for the rivets holding angles or plates together and for the bolts securing guide to the wall. Heat destructible washers are placed underneath the heads of the rivets and bolts, this providing means for expansion and eliminating the danger of buckling guides in case of fire. The depth of the grooves is increased to accommodate the increase in width of openings.

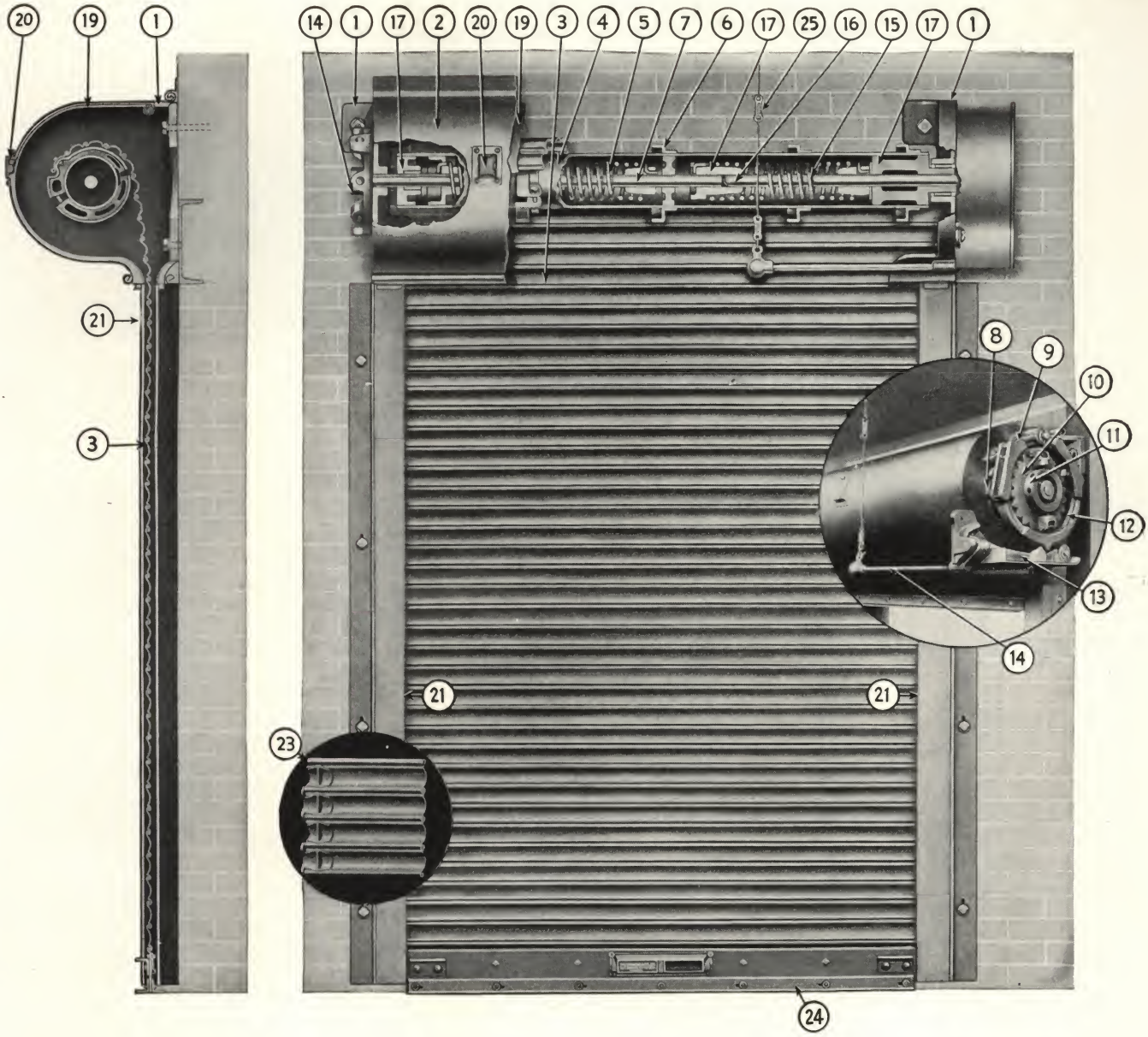
22. Clearance—Sufficient clearance is provided between ends of curtain and back of guides and between all other operating parts, to accommodate an expansion for temperatures up to and including 1800 degrees F.

23. End Locks—These are placed on every slat and are made of malleable iron, shaped to close the concave ends of the slats and to prevent the passage of hot gases and smoke around the edge of the curtain. These end locks retain the slats in place, maintain alignment and protect the slats against abrasion in the guides.

24. Bottom Bar—Designed to re-enforce the bottom of the curtain and made of two angles and a flat plate. These parts are held together with rivets or bolts in slotted holes and are provided with heat-destructible washers for tak-

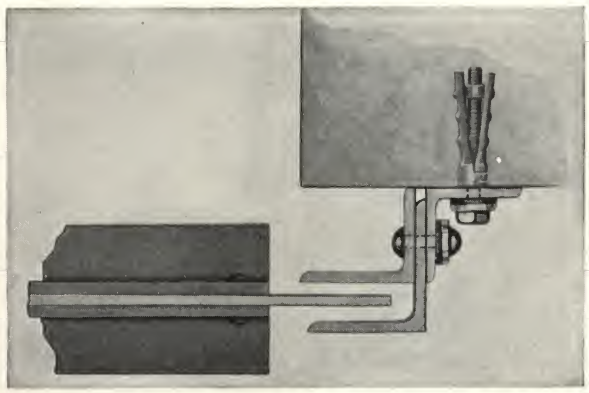
Kinnear Steel Rolling Fire Doors on headgates leading to penstocks in Power House No. 2 of the Niagara Falls Power Company. Another example of the numerous applications for which Kinnear Doors are suited

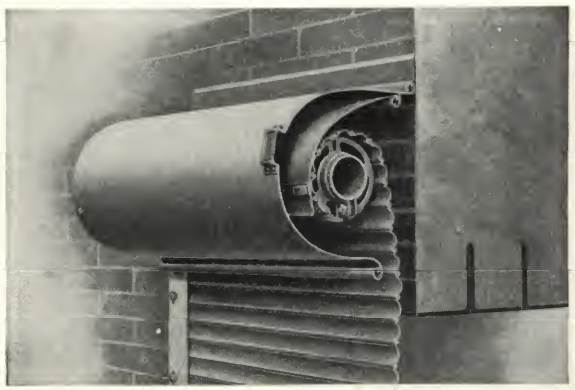
Protection afforded the Bessemer Building, Springfield, Ill., by the use of Kinnear Steel Rolling Fire Shutters on all windows on the fire exposure side, is self-evident. All the shutters automatically closed when the fire started



22—*Two of the many provisions made in Akbar construction to accommodate expansion for temperatures of high degree are: Ample clearance between ends of curtain and back of guide and bolts and rivets in slotted holes with steel and fusible washers.*

Showing how the auxiliary hood on Akbar Door drops over the curtain coil when the fusible link melts under excessive heat exposure. This shield becomes a baffle against the passage of smoke and hot gases over top of curtain.





ing care of expansion in case of fire. The bar is provided with handles for raising the door and with stops for retaining it, when open, in an exact position against the coil bracket and free for a direct start in closing automatically in case of fire. Slide bolt locks, as used on steel rolling service doors, can be furnished on these bottom bars when specified.

Note: The bottom bar carries both the Underwriters' label and Kinnear's name plate which bears the number that will identify the door in case any repair parts are ever required. THE KINNEAR MANUFACTURING CO., maintains complete order, detail and pattern files which provide information that enables them to duplicate any part ever furnished on a door of their manufacture.

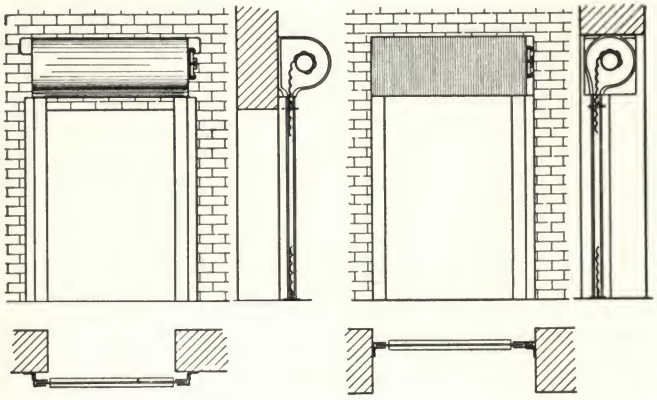
UNDERWRITERS' LABELS

Kinnear Fire Doors and Shutters are inspected by the Underwriters' Laboratories, Inc., and when built within size limits, listed below, bear the required label. While the Underwriters' label is the assurance of an acceptable and rated fire guard, it is not an indication of maximum quality, as set forth in the following quotation taken from their code book: "Products of the manufacturers labeled and listed as mentioned herein are not necessarily equivalent in quality or merit; the labeling and listing indicating only compliance with Underwriters' standards."

In making comparisons, this point should be considered, as Kinnear Doors embody refinements that are unique and which increase their value and utility.

METHODS OF OPERATION

While provided with mechanism for automatic closure, Kinnear Fire Doors may be arranged for various methods of operation, when also being used for service purposes. They are namely: manual push-up, chain hoist, crank hoist and electrically. Illustrations at the right and the one on page 13 show how the automatic closing mechanism is incorporated in the case of the first three types.



INSTALLATION

As illustrated above Kinnear Fire Doors can be mounted on the face of the wall with brackets and coil entirely above the bottom of the lintel; or in the opening, in which case the brackets and coil are located on the jambs or in reveals provided in the jambs.

Where an opening requires a door on both sides of the wall and it is desirable to mount the mechanism between the jambs, the coils are placed either opposite each other or one above the other, depending upon the thickness of the wall.

If Kinnear Engineers are given the opportunity to work with the Architect and Contractor during the designing of the building, it is frequently possible to completely conceal all working parts of the door, and through the use of marble, bronze or other materials, make a very attractive installation.

TYPES OF LABELS

The drawing below illustrates the four classifications under which Kinnear Doors are labeled. The size limitations established by the Underwriters; for each classification are as follows:

Class A—Openings in fire walls not exceeding 80 sq. ft.; the width and height not to exceed 12 ft.

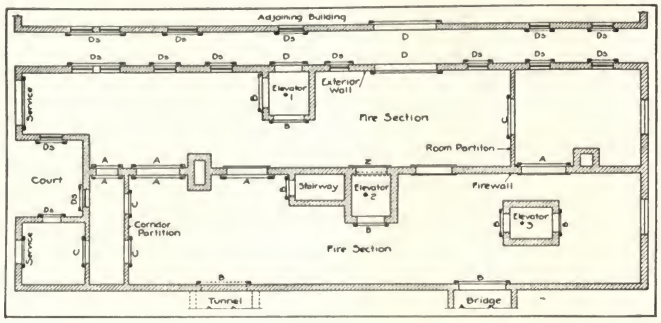
Class B—Openings in vertical shafts, such as elevator shafts, the size limits being the same as in Class A.

Class C—Openings in corridors and room partitions, the size limits being the same as in Class A.

Class D—Openings in exterior walls not exceeding 100 sq. ft.; where width and height does not exceed 12 ft.

As Kinnear Fire Doors of large size are built according to the same standards the Underwriters will inspect and issue an oversize label on construction (with exception) for doors not exceeding 24 ft. in width or height.

As requirements vary in different localities, the local Inspection Bureau should be consulted. Kinnear Engineers will also gladly submit detailed recommendations upon request.

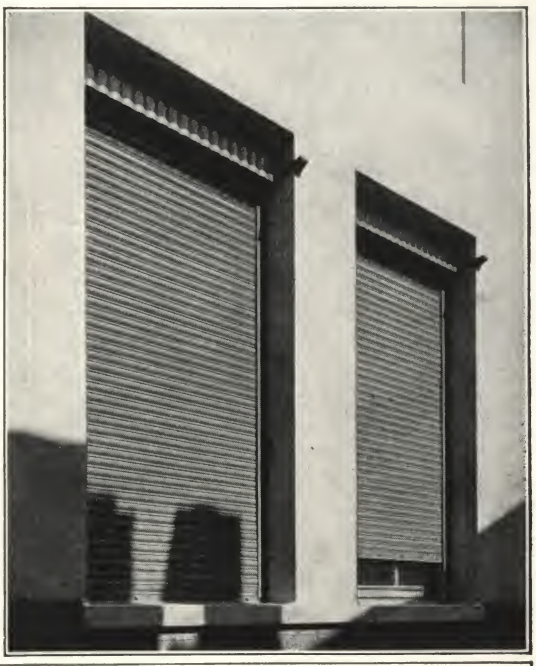


Closing a fire wall opening in a passage way with a Kinnear Akbar Door. Note how all mechanism is concealed. Though the door is normally kept in the open position, the curtain gives a clean-cut appearance when closed

Three oversize Class A Kinnear Steel Rolling Fire Doors installed on a fire wall in the Fashion Department Store, Columbus, Ohio. Installed at the time the store expanded its operations into the adjoining building. Size 17 ft. 11 in. x 10 ft. 1⅝ in.

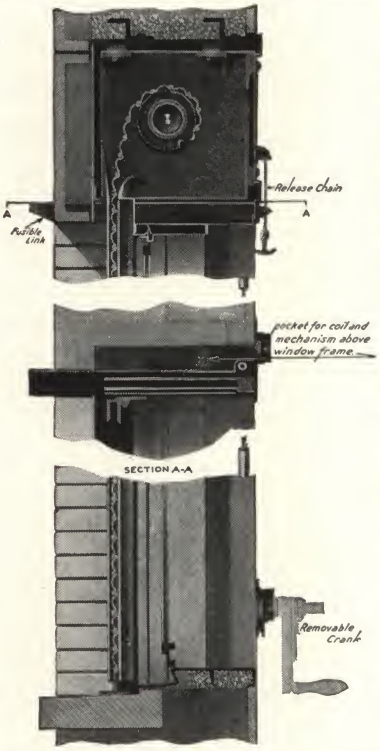
"SUPERIOR" Fire Window Shutters

Automatic and Designed for Periodic Testing



Superior Fire Shutters are substantially the same in design as the Kinnear Akbar Fire Doors, except they are not constructed for service raising and closing. They are provided with the safety governor regulating the closing speed so as to eliminate all personal danger hazards and destructive impacts on the window sill. Provision is made for periodic testing. By the tripping of a release chain accessible from the inside wall, the shutter is closed the same as if it were automatically closed in case of fire. It can then be raised to the open position by a gearless rewind mechanism and a hand crank easily accessible from the floor. Crank to be removed when not in use.

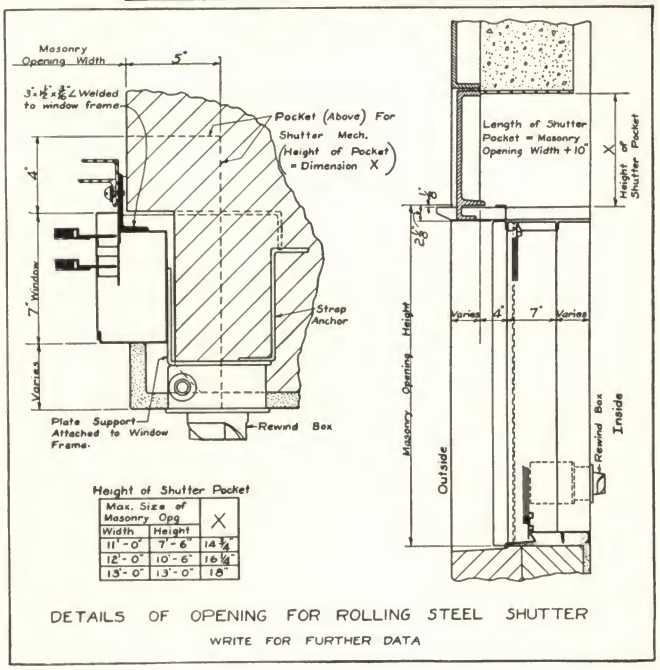
To insure positive starting, a powerful push-down spring gives the curtain a hammer starting blow of approximately 200 inch-pounds simultaneously with fusing of the releasing link.



Superior Fire Shutters are constructed to the standards of the Underwriters and labeled for exterior window openings not exceeding 100 sq. ft. in area; or more than 12 ft. in width or height. True to its name, this is a superior device embodying the same skilled workmanship and high quality materials as found in other Kinnear Equipment.

As can be seen from the illustrations the Superior Fire Shutter can be almost completely concealed, particularly when they are installed at the time the building is constructed. For application on old buildings the coil and brackets are mounted on the oustide face of wall, above the lintel.

Note: Superior Fire Shutters are ideal also for dark rooms, such as x-ray rooms in hospitals, etc. Many of them are at this time being used for that purpose. Special recommendations will be submitted upon request.



Height of Shutter Pocket

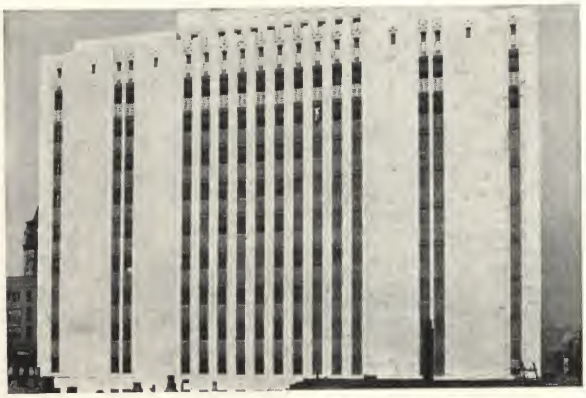
Max. Size of Masonry Opg		X
Width	Height	
11'-0"	7'-6"	14 3/4"
12'-0"	10'-6"	16 1/4"
13'-0"	13'-0"	18"

DETAILS OF OPENING FOR ROLLING STEEL SHUTTER

WRITE FOR FURTHER DATA

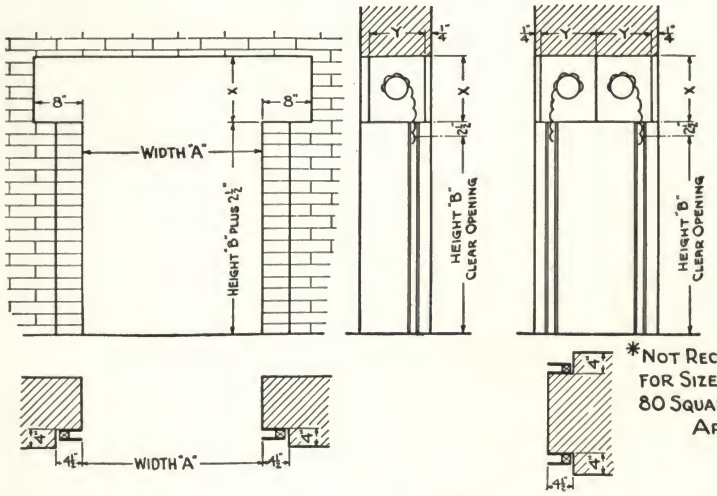
The Superior Fire Shutters installed in the Cincinnati Suburban Telephone Building, Cincinnati, Ohio, are equivalent to a man standing ready at all times to close the window openings in the event of fire

Detroit Exchange of The Michigan Telephone and Telegraph Company which is fully equipped with the concealed type of Kinnear Automatic Steel Rolling Fire Shutters



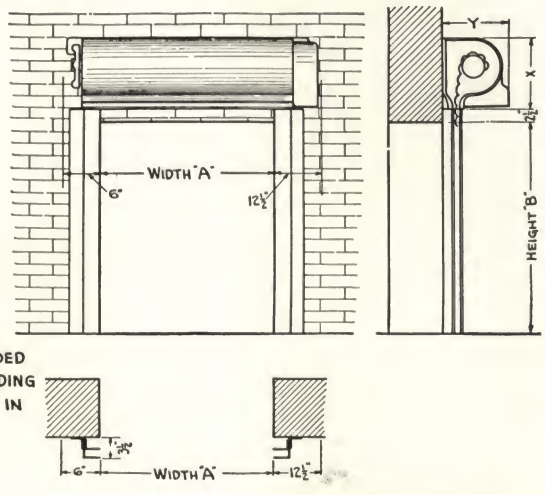
UNDERWRITERS' LABELED—AKBAR FIRE DOORS—AUTOMATIC CLOSING

HAND LIFT TYPE, UNDER LINTEL MOUNTING



*NOT RECOMMENDED FOR SIZES EXCEEDING 80 SQUARE FEET IN AREA.

HAND LIFT TYPE, FACE MOUNTING



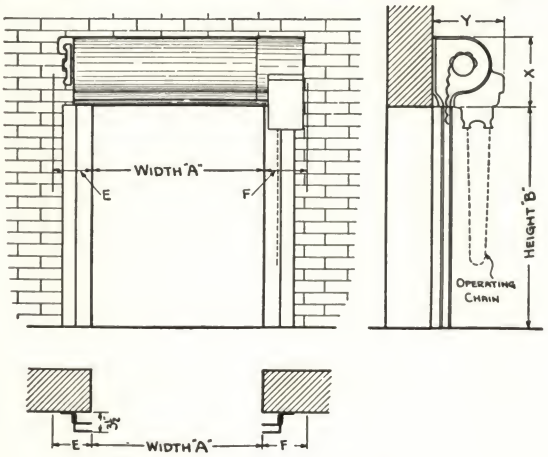
CLEARANCE DIMENSIONS, INCHES

Height B, Ft.		6		7		8		9		10		11		12	
		X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
Width A, Feet	3	17	13	17	13	17	13	17	14	18	15	18	15	20	17
	4	17	13	17	13	17	13	17	14	18	15	18	15	20	17
	5	17	13	17	13	17	14	17	14	18	15	20	17	20	17
	6	17	13	17	13	17	14	17	14	19	16	20	17	20	17
	7	17	13	17	14	17	14	19	16	19	16	20	17	20	17
	8	17	13	17	14	19	16	19	16	19	16	20	17	20	17
	9	17	13	17	14	19	16	19	16	19	16	20	17	20	17
	10	17	13	19	16	19	16	19	16	19	16	20	17	20	17

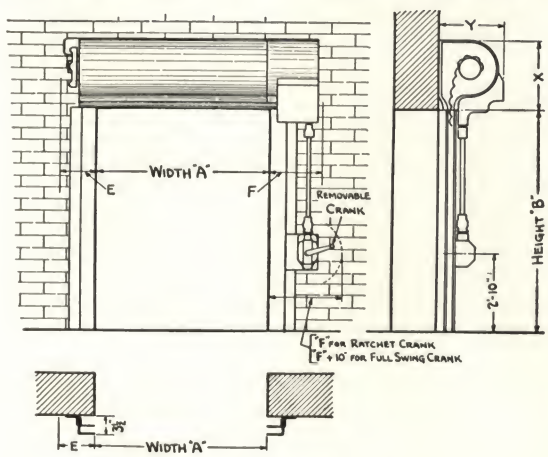
CLEARANCE DIMENSIONS, INCHES

Height B, Ft.		6		7		8		9		10		11		12	
		X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
Width A, Feet	3	15	16	15	16	15	16	17	18	17	18	18	18	18	18
	4	15	16	15	16	15	16	17	18	17	18	18	18	19	19
	5	15	16	15	16	16	16	17	18	17	18	19	19	19	19
	6	15	16	15	16	16	16	17	18	19	19	19	19	19	19
	7	15	16	16	16	16	16	18	18	19	19	19	19	19	19
	8	15	16	16	16	18	18	18	18	19	19	19	19	19	19
	9	15	16	16	16	18	18	18	18	19	19	19	19	19	19
	10	15	16	18	18	18	18	18	18	19	19	19	19	19	19

CHAIN HOIST TYPE, FACE MOUNTING



CRANK SHAFT TYPE, FACE MOUNTING



CLEARANCE DIMENSIONS, INCHES

Hgt. B, Ft.		6				7				8				9				10				11				12			
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Feet	5	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9
	6	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9
	7	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9
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	12	17	20	10	10	17	20	10	10	17	20	10	10	17	20	7	10	18	21	7	12	18	21	7	12	18	21	7	12

CLEARANCE DIMENSIONS, INCHES

Hgt. B, Ft.		6				7				8				9				10				11				12			
		X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Width A, Feet	5	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12
	6	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12
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	8	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12
	9	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	18	18	7	12
	10	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	18	18	7	12
	11	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	7	12	18	18	7	12	18	18	7	12
	12	17	17	10	13	17	17	10	13	17	17	10	13	17	17	7	13	17	17	7	13	18	18	7	13	18	18	7	13

Note: For doors of intermediate sizes, use clearance dimensions listed for next larger width or height.
Slat No. 2 used on all door sizes listed on this page.

POWER UNITS

In keeping with today's demand for greater speed and convenience, Kinnear Motor Operated Doors are rapidly becoming one of the most popular Kinnear installations. For rolling doors are especially adapted to electric operation and the Kinnear Power Unit provides a rugged, compact and dependable operator which is available for any size new or old door. With control stations placed at any convenient point, the door can be remotely controlled with a press of a button . . . magically opening and closing it with speed, smoothness and dependency. The saving in time alone, which Kinnear Motor Doors effect, quickly pays for their moderate cost.

METHOD OF OPERATION

The door is driven by electric motor through reduction gearing, the operation being accomplished as follows:

By momentary contact of the "Open" or "Close" button on the operating switch, the pilot circuit magnetically closes the main line reversing switch and starts the motor. The limit switch will, at the termination of the door travel, open the pilot circuit, thereby breaking the main circuit and simultaneously the magnetic brake will close, stopping the motor. The door can be stopped at any intermediate position by pushing the stop button, from which position it can either be opened or closed.

EMERGENCY OPERATION

A distinctive feature that has created a general preference for the Kinnear Power Unit is the provision for emergency manual operation by hand chain in the event of interrupted power service. This is accomplished by pulling down on a hand chain which instantly engages emergency operator, releases the motor brake and opens the motor control circuit which prevents the motor being inadvertently started until the emergency operator is detached.

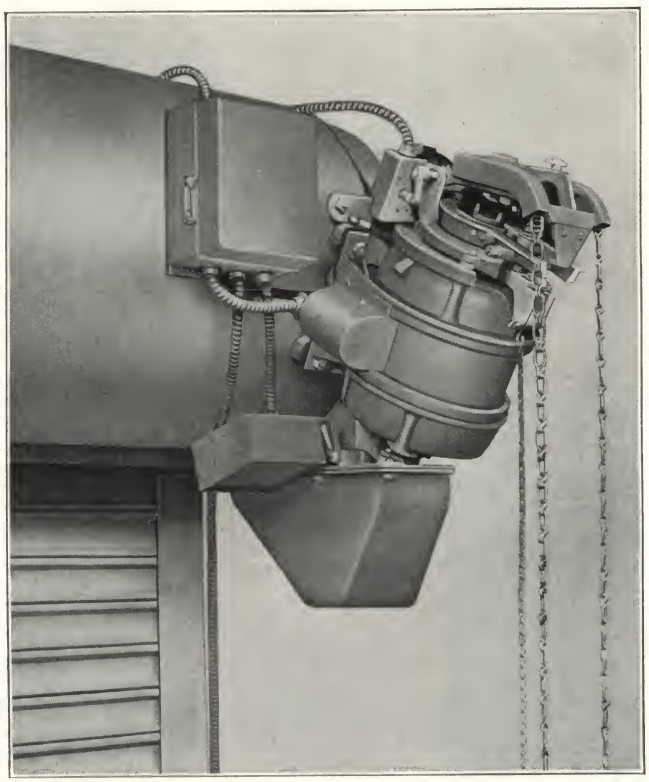
After the emergency operator is engaged as above described, the door is operable by hand chain. When not in use the emergency operating and control chains are held out of the way by a keeper on the wall.

GENERAL SPECIFICATIONS

Each Kinnear Power Unit comprises the following: Power unit supports, motor reduction gears, magnetic brake, limit switch, emergency manual operation with interlocking limit switch, reversing panel and single station push button control. Motor is of series wound type for direct current and of high starting torque, elevator type, for alternating current. Available for 110-220-440-550 volts . . . AC—1, 2, or 3 phase—DC.

Push button control is three button type, labeled "Open," "Close" and "Stop."

Magnetic reversing panel for remote control is fully enclosed and mechanically interlocked.



Power unit mounted on bracket

WIRING

The wire, conduit and fuses are not furnished or installed by THE KINNEAR MANUFACTURING CO., but are to be provided by others in accordance with wiring diagrams supplied by Kinnear.

GENERAL

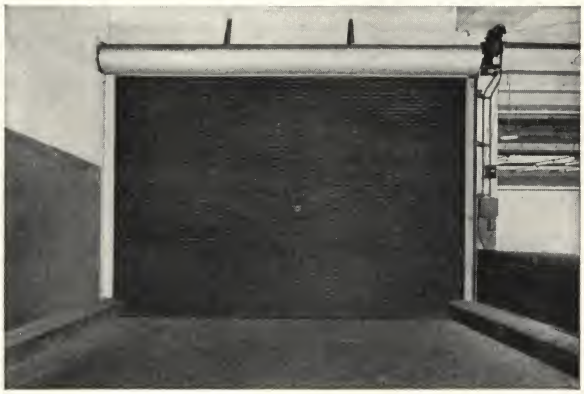
Kinnear Power Units are built by Engineers who have not only spent years of painstaking effort in designing a highly perfected operator but who are also familiar with the doors upon which they are used. As a result, the operator and door is a perfectly matched, efficient combination. More complete details and quotations on equipment exactly suited to your needs will be gladly furnished upon request. Complete current characteristics should accompany all requests for quotations.

For other Kinnear Electric Door Operating Equipment see pages 18 and 25. As it is impossible to list all Kinnear equipment in this catalog, should the type of equipment you require not be shown, write Kinnear for special recommendations.

See page 18 for details on special control units.

Kinnear Operators are compact as will be noted from this installation . . . one of seventy-three electrically operated Kinnear Doors installed in St. John's Terminal, New York City. Part of a battery of 119 Kinnear Doors

One of a large installation of Kinnear Motor Operated Doors ranging in size from 42x21 ft. downward, provided with remote control with conveniently located operating stations.



DOOR CONTROL EQUIPMENT

Magic-like Operation for Any Type of Door

In addition to the standard push button control equipment, Kinnear Engineers have developed various other methods of control which provide almost magic operation for any type door that can be motorized. Incorporating highly perfected electrical mechanisms, these controls are adaptable to any industrial or commercial opening where automatic door operation is desired. They prove particularly advantageous on such openings as entrance doors to garages and retail establishments, passage doors to kitchens, hospitals and industrial buildings, or other openings through which there is considerable traffic. As noted in the following, these control units are offered in a number of different combinations of equipment. When you have unusual requirements, regardless of how difficult they may seem, where equipment herein described is not applicable, write Kinnear Engineers for their recommendations.

Model P E—S D

Swinging doors on a restaurant kitchen equipped with a Kinnear Standard Swinging Door Operator and Photo Electric Control, the former being neatly encased above the opening and the latter remotely concealed. Facilitates service and effects economies in labor time. Described fully as (B) under "applications."

PHOTO-ELECTRIC CONTROL

Kinnear Photo-Electric Equipment provides entirely automatic opening and closing of the door by the mere interception of a light beam. The advantages of this type of control are numerous. Where there is considerable traffic, it makes substantial savings in the labor time of operating doors manually. Also, operating quickly and smoothly, it speeds up service, gives a reception that is appealing to customers, and closing immediately after the person or car has passed through the opening it prevents the unnecessary escape of heat. In hospitals, where sanitation is important, it provides untouched opening and closing of the doors. In other words, Kinnear Photo-Electric Control is modern equipment for modern establishments; it has been perfected by specialized door Engineers.

EQUIPMENT

In general, the photo-electric control consists of a light source provided with suitable bulb (and if necessary suitable lenses and reflectors) and an electronic photo tube, which is light sensitive, both provided with suitable housings. The housings are of various types depending upon the requirements for each installation. Where mounted on floors they are of the pipe guard type. For flush mounting in walls, suitable cover plates are furnished and, when necessary to mount equipment on faces of walls, they are furnished with suitable guards designed to deflect passing objects that might injuriously contact them. In some positions, visors are required to exclude extraneous light. Likewise special mirror reflectors are sometimes necessary to increase the number of crossings for the light beam.

In addition to the above, there is a control unit consisting of a grid-glow tube, relay and other accessories. The control unit is of the heavy duty type, the only moving part being the closing contactor of the heavy duty relay.

Important—Conforming to Kinnear's policy of offering only highly durable equipment built to the highest standards, it should be noted that the Kinnear Photo-Electric Control Unit uses a heavy duty type relay. In other words, no telephone or other delicate microammeter relays are used.

OPERATION

The light source projects a beam of light to a light-sensitive photo tube. The arrangement of the beam or beams is determined by the results required. Mirror reflectors can be located at intervals between the light source and photo tube and thereby reflect the beam of light back and forth across the opening path. When the light beam is intercepted at any place, it causes the photo tube to trigger off the grid-glow tube which is contained in the controller unit. This causes the grid-glow tube to function the heavy duty relay during the entire period of time the light beam is broken. As soon as the light beam is restored to the photo tube, the grid-glow tube functions to return the relay to its normal position.

The contacts of the relay in the grid-glow tube control unit are connected in the control circuit of the magnetic switch for the door operator so as to control the operation in opening and closing the door.

APPLICATIONS

The Kinnear Photo-Electric Control Unit can be designed to provide several arrangements of control for the door operator. A few of these arrangements are described in general as follows and shown in Fig. 1 on page 19.

(A) The photo-electric equipment in the sensitive field method is so arranged that a sensitive field is built up by reflecting beams back and forth between the established distance known as the opening and closing lines. When a car intercepts this zig-zagged beam of light at any point, the door opens and remains open during the entire period of time that the car remains in any position, whether stationary or moving, within this field. This method provides full automatic control which is fool-proof and reliable and is the type of installation generally used for controlling swinging doors through which a tractor and train of trailers pass. It is also applicable for any industrial plant using hand trucks or tractors.

(B) The second method of installation used for entrance or exit doors in buildings for pedestrians. It is also efficient for passage doors in kitchens, hospital rooms and many other similar places. In this layout, the pedestrian passes through the beam of light and the door opens. It is then closed in an established length of time by a time relay device, providing no other person enters through the light beam. This arrangement is intended to keep the door open where the traffic through the door is continuous to the extent where the intervals between light interception does not exceed three seconds.

(C) A third method of installation provides two beams of light, one on each side of the door. The interception of either beam causes the door to open and the interception and restoring of the opposite beam causes the door to close. This method is employed where there is no reasonable chance of two objects or persons entering the space between the light beams contemporaneously.

(D) The fourth method is intended mainly for garages and is arranged so that a car or person intercepting the beam will operate and open the door. But the door is closed only by push button.

(E) The fifth type of installation is also applicable mainly to garages. Especially where the door is located on the lot or side walk line, where the car may be delayed and remain in the opening for a short period of time in order to wait on the passing traffic. In this case a beam of light is projected between the door jambs. The door is opened by means of a push button but will close only after the car has passed through the opening. In this case, the control closing the door is actuated only after this beam of light has been intercepted and then restored.

In practically all installations, it is possible to arrange the photo-electric control so that it can be operated by automobile or other large objects but not by pedestrians. This method of control requires extra projected beams of light and necessitates more equipment. Also, devices can be supplied at extra cost which will project invisible beams of light. This, however, is possible only where the beam is projected for a comparatively short distance.

There are other possible arrangements of the photo-electric equipment and the Kinnear Engineering Department will gladly offer recommendations and furnish layouts upon request.

INSTALLATION

Depending upon the model furnished, Kinnear Photo-Electric Equipment is shipped complete with the exception of wiring, conduits and materials that may be required for the proper reception of the equipment. Units are built for either AC or DC current, this must be specified. When given the opportunity to work with the Architect during the designing of a new building, a more attractive installation can often be arranged. As in the case of other Kinnear equipment, trained installation mechanics are available to relieve the contractor or owner of installation responsibility. However, detailed installation instructions enables the purchaser to easily arrange for his own installation.

SENSITIVE MAT CONTROL

For pedestrian use only, Kinnear Engineers have developed a special type of mat control which functions to operate doors in a manner similar to that described as application (B) under photo-electric control. This mat may be installed under battleship linoleum, rugs or other suitable floor covering. It is less expensive than photo-electric control, yet is equally as satisfactory for the purpose intended, affording the same advantages and economies. Operation is initiated by walking over an area under which the sensitive mat has been placed. The person's weight causes a low voltage electrical contact which actuates a heavy duty timing relay, which in turn controls the door.

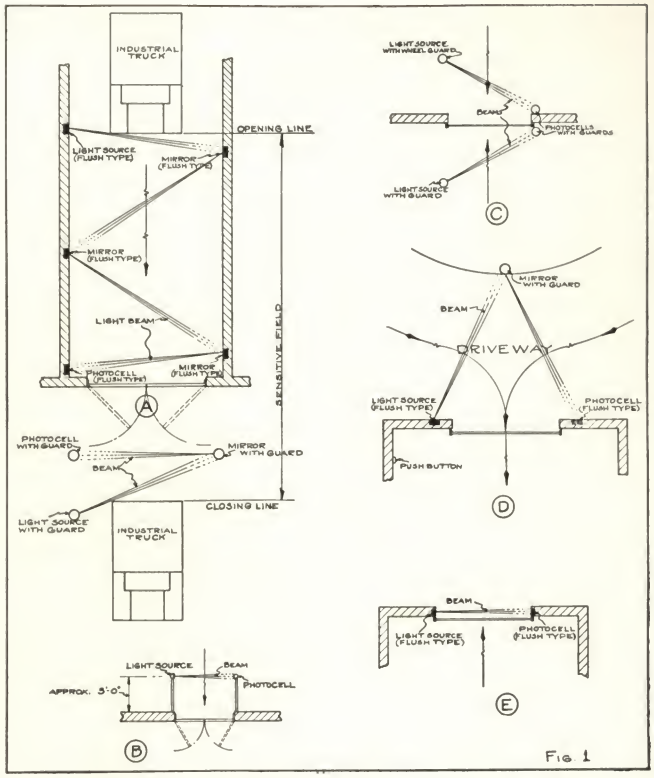


Fig 1

SWINGING DOOR OPERATORS

For conditions where swinging doors are the only practical type, Kinnear Swinging Door Operators, discussed below, are offered. Electrically operated, they may be controlled, by push buttons, photo-electric or sensitive mat control, which has been described in the preceding.

HEAVY DUTY SWINGING DOORS

The Kinnear Heavy Duty Swinging Door was designed primarily for openings through which power operated tractors or small trucks operate. The doors are of heavy steel construction and the operating unit is located in the door proper, making them particularly suited for locations where limited headroom only is available. These doors are positively driven in both the opening and closing directions. They are equipped with collapsible steel plate bumpers, which if depressed, release the motor operator and thus allow the door to swing freely and away when bumped.

Model P E—H D

A Kinnear Photo-Electric Controled Heavy Duty Swinging Door for applications, such as described under (A) in the above description on Photo Electric Controls. Type of equipment now being installed in the new Philadelphia Post Office

After the door has been pushed open due to collision with a tractor or truck, it will automatically relatch the operator without any personal attention. This type of door is ideally suited for use with Kinnear Photo-Electric Control in a manner described on application (A) under photo-electric control. When so equipped, it provides fully automatic arrangement.

STANDARD SWINGING DOOR OPERATOR

The Kinnear Standard Swinging Door Operators are for installation on entrances and exits of buildings such as department stores, restaurants, etc. These operators, (for illustration, see page 18) drive the doors open quickly with a positive driving force and they close with a gentle checking action. These doors may be pushed or held open manually without the necessity of disconnecting any of the operating mechanism. This permits abrupt contacts and also allows the door to be opened manually and closed with the automatic door closer in case of power failure. When equipped with photo-electric control or sensitive mat control for use in a manner described under Application (B) in the preceding, the door automatically opens when it is approached. The door then remains open for a period of time sufficient to allow a pedestrian to pass through, after which time it closes automatically. If the door is in an intermediate closing position at the time another pedestrian approaches, the door will immediately revert to its full open position. When a number of people pass through, the door stays open until the last person has passed through.

GENERAL

Kinnear Door Control Equipment and Electric Operators have such a multiplicity of practical applications, it is advisable to consult a Kinnear Engineer whenever contemplating equipment of this nature. Equipment described in the above can be supplied in various combinations or in individual units. Through Kinnear's specialized door experience, it is frequently possible, by studying your particular needs, to suggest a special application that will considerably enhance the value of the installation.

SPECIFICATIONS

STEEL ROLLING SERVICE DOORS

Openings—Shall be equipped with Kinnear Steel Rolling Doors.

Curtain—Shall be of interlocking slats, rolled not drawn, formed in easy curves without sharp bends, from open hearth steel gauge *(see note below)*. Slats to be of section sufficiently large to give curtain strength to safely resist a wind load of 20 lbs. per sq. ft., but for doors exceeding 25 ft. in clear width curtain shall be provided with lugs as windlocks to engage bars in guides and to lock the curtain against wind pressure. Each alternate slat shall be fitted with malleable endlocks ⅜ in. thick. Bottom bar to be two angles placed back to back.

Note: The gauge of the slats to be specified according to the following chart:

Height		8′ 0″	12′ 0″	28′ 0″
Width	33′ 25′ 20′ 13′6″	22 U. S. Gauge.		25′ 18′ 12′6″
		20 U. S. Gauge		
		18 U. S. Gauge		
		18 U. S. Gauge (with windlocks)		

Galvanizing—To be hot process, free from blisters and other imperfections, with a high grade pure zinc coating heavy enough to add 0.9 oz. of weight to every square foot of flat metal.

Counterbalance—Curtain to be coiled on a pipe of size sufficient to carry the door load with a deflection not to exceed .03 in. per ft. of opening width, and to be evenly balanced by helical springs contained in pipe.

Coil Brackets—To be of high grade gray iron designed to house ends of the coil.

Hood—The coil to be housed with a sheet metal hood No. 22 U. S. gauge for doors over 20 ft. wide and No. 24 U. S. gauge for narrower sizes.

Guides—Built of structural steel to form a slot of sufficient depth to retain curtain for doors under 25 ft. in width in guides against heavy wind pressure without using the windlocks, but for doors exceeding this width guides must be provided with anchors for windlocks.

ALTERNATES FOR STANDARD SERVICE AND MOTOR OPERATION

Standard Service

Operation—To be—

(A) Manually by means of handles on bottom bar.
(B) Hand chain, sprocket and gear; maximum allowed pull 35 lbs.
(C) Crank, shafting and gear; maximum exertion on crank 20 lbs.

Gear—To be of best grade gray iron, cast teeth machine moulded from machine cut patterns.

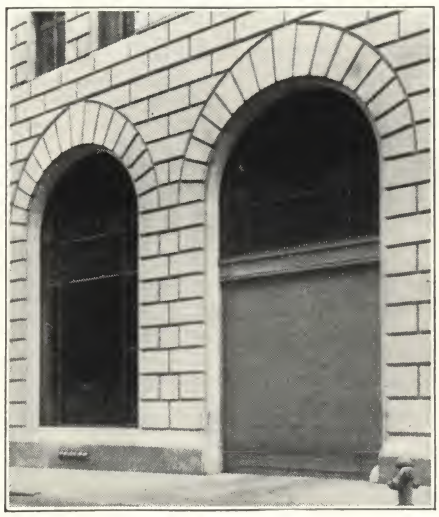
Motor Operation

Operation—Doors to be operated by means of an electric motor. The control circuit shall be closed by means of push buttons, and automatic limit switches will break circuit at termination of travel. Door to be stopped at intermediate points by stop button from where it can then be operated in either direction.

Motor—To be high starting torque elevator or hoist motor, raising or lowering curtain at approximately .67 ft. per second.

Reduction Gear—Of the power unit shall be machine cut gear completely housed and running in oil bath.

Emergency Operation—A control for automatically engaging a sprocket and chain and releasing the brake, shall be operable from the floor. A device which shall automatically prevent the motor from operating until emergency sprocket is disengaged shall be provided. Emergency operation shall not affect timing of limit switch.



Control Switches—Shall consist of 3 push button switch, "open," "close" and "stop"; remote control magnetic enclosed switch panel for reversing motors, and automatic limit switch.

Erection—All doors shall be erected by the manufacturer or his authorized representative and shall be guaranteed against defective material and workmanship for a period of one year from the date of completion of erection.

Wiring—Wires, wiring, conduit and fuses are not furnished or erected by Rolling Door Contractor, but are to be installed with the control switches by others, according to diagrams furnished by door contractor.

STEEL ROLLING DOORS LABELED BY NATIONAL BOARD OF FIRE UNDERWRITERS

Openings—Shall be equipped with Kinnear Steel Rolling Automatic Fire Doors of the Akbar Construction.

Label—All doors to bear the label of the National Board of Fire Underwriters.

Note: The National Board of Fire Underwriters label and classify the Akbar doors, as Class "A" for fire walls, "B" for vertical shafts, "C" for corridor and room partitions and "D" for exterior walls, where the opening does not exceed in area 80 sq. ft. for Class "A," "B" and "C" doors and 100 sq. ft. for Class "D" doors, or 12 ft. in width or height. Openings exceeding these dimensions in size and not exceeding 24 ft. 0 in. in either dimension are furnished with Underwriters' Oversize Label.

Operation—All doors to be automatic closing in the event of fire. Doors not exceeding 8 ft. high or 80 sq. ft. in area can be operated by means of handles on the bottom bar; but larger sizes shall be operated through reduction gear by hand chain (or crank).

Automatic Closing Device—To be thermally controlled by means of a fusible link. The door shall be forced to a closed position by an auxiliary spring in spring barrel which is inoperative during normal operation and released by thermal control without affecting the permanent adjustment of the counterbalance spring.

Counterbalance—Curtain to be evenly balanced by helical springs contained within spring barrel. Counterbalance to be permanently maintained and doors shall operate easily both normally and after automatic closure.

Safety Device—To be an automatic governor of escapement type inoperative during normal operation but which shall so control the speed of the curtain during automatic operation as to prevent injury to persons accidentally under the door.

Curtain—To be of Kinnear interlocking slats rolled from copper bearing steel with no sharp bends and hot galvanized. The ends of the slats to be fitted with endlocks ⅜ in. thick. Gauge of metal and type of endlocks as established by National Board of Fire Underwriters for the specified class risk.

Gauge of metal to be No. 20 U. S. gauge for Class "A," "B" and "C" doors and No. 22 U. S. Gauge for Class "D" doors.

Brackets—To be high grade iron with roller bearings in bracket for revolving end of barrel.

Guides—To be of structural steel $\frac{3}{16}$ in. thick arranged for expansion at all rivet and bolt connections.

Hoods—The coils to be enclosed with sheet metal housing of No. 24 U. S. gauge. For interior wall doors hoods to be furnished with a drop hood thermally controlled, closing against the coil when automatically released, but not interfering with coil during normal operation.

Paint—All parts of the door except mechanism to be given one shop coat of red oxide; the mechanism to be dipped in flat black.

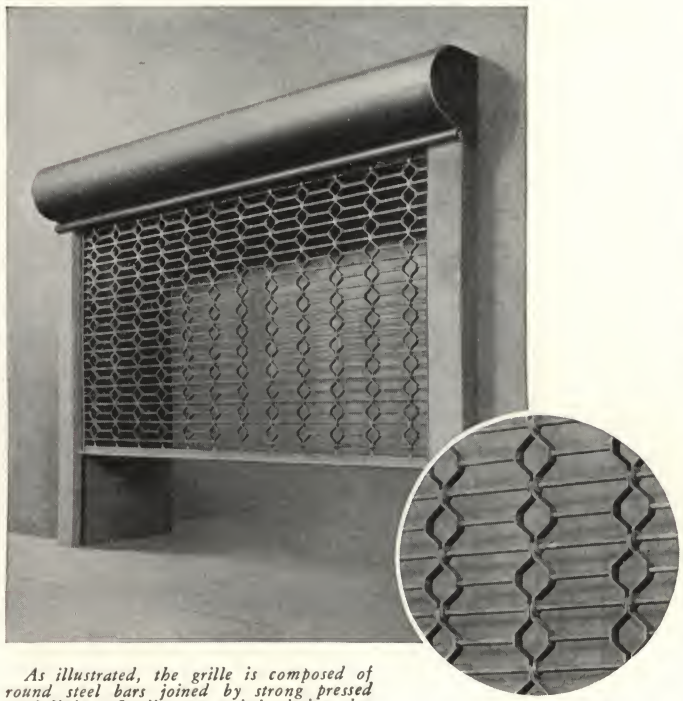
Erection—All doors shall be erected by the manufacturer or his authorized representative and shall be guaranteed against defective material and workmanship for a period of one year from the date of completion of erection.

ROLLING GRILLE

Steel—Stainless Steel
Bronze—Aluminum

ADVANTAGES

The Rolling Grille is another Kinnear development. Embodying the same principle of construction and built by the same competent and skilled mechanics as the Kinnear Rolling Doors, the Rolling Grille is a product of proven merit ideally suited for many new and modern uses. It offers a permanent installation that can be quickly opened and closed, providing a safeguard against trespassing, burglary and kidnapping—without the sacrifice of the passage of air and light or obstruction of vision. Coiling in a small space above the lintel it occupies no useful space. Accurately counterbalanced it is easily opened or closed and can be locked closed. Attractive in design and built in various metals, it harmonizes with any architecture. Its practicability for numerous purposes is shown by its rapidly increasing popularity.



As illustrated, the grille is composed of round steel bars joined by strong pressed steel links, affording an artistic design that is strong and durable. The spaces between the component parts are small enough to prevent a man's hand being inserted through the grille work

USES

While the Rolling Grille readily suggests itself for a multiplicity of uses a few of the more common uses are listed as follows: Exterior and interior commercial openings; school buildings, store fronts, concessions, show windows and display rooms containing valuable merchandise; day time protection of vaults, bank tellers; industrial openings; elevator shafts; commission houses containing perishable merchandise; piers and platforms. Private and public homes; residences; etc.

Left: *A large grille for New Orleans delivery. Installed in the Kinnear plant for examination before shipment . . . illustrates the care taken with all Kinnear Doors prior to delivery to the job. Operated by chain and reduction gearing*

Right: *Showing the practicability of Kinnear Rolling Grilles for use on all types of interior concessions*

GENERAL CONSTRUCTION

The Grille proper is made of round steel bars carrying or connected by strong pressed steel links (also other metals). It coils in a barrel journaled in heavy cast iron brackets, and is locked in and travels in steel guides mounted at the side of the opening. Helical springs enclosed in the barrel provide perfect counterbalance. A hood of suitable design and metal is furnished for covering the barrel and coil. Customary to Kinnear practice, each grille is individually built to meet the particular requirement. Similar to the steel rolling door, the grille can be mounted on the face of the wall, with coil above the bottom of the lintel, or in the opening with coil between jambs or in reveals provided. The building can be designed to house and conceal all working parts.

The Grille can be arranged for operation by means of handle in bottom bar; chain and reduction gearing; crank and reduction gearing; or electric power equipment. The method employed usually being determined by the size of the grille.

For positive protection a secure locking arrangement is provided, the type depending upon the method of operation employed.

Whenever you have need for a guard of the grille type, write Kinnear Engineers for special recommendations on this new and modern equipment.

SPECIFICATIONS

Grille—Composed of round steel bars joined by pressed steel links of octagonal shape. Alternate bars welded to links. Remaining bars hinged so as to provide smooth operating, flexible grille. Bars $\frac{5}{16}$ in. diameter and links formed from $\frac{5}{8}$x$\frac{1}{8}$-in. steel bars.

Counterbalance—Oil-tempered helical springs wound from especially heat-treated steel and tempered with oil, mounted on cold rolled polished steel shafting. Spring and shafting carried in heavy steel barrel, which has a threefold purpose; viz: encases counterbalance mechanism, is load carrying beam, and provides axis around which grille coils. Barrel is of sufficient diameter to avoid deflection in excess of .03 in. per lineal foot of barrel.

Barrel Rings—Barrel is provided with malleable iron rings of special involute shape, designed to coil the grille with a uniformly increasing diameter, thereby insuring uniform counterbalance.

Barrel Plugs—Cast iron plugs of special Kinnear design to eliminate excessive strain at spring ends.

Endlocks—Side edges of grille are provided with malleable iron endlocks of special Kinnear design, which engage in guides providing a bearing surface and also preventing the grille from leaving guides in case of excessive deflection.

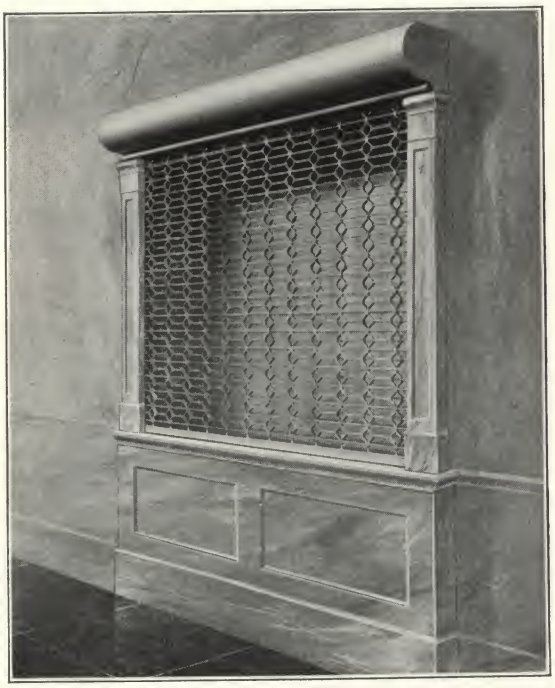
Bottom Bar—Two structural steel angles. Increases grille's strength and facilitates operation.

Guides—Structural steel angles, designed to give groove depth from 2 to 8 in. So arranged to engage endlocks and prevent grille from leaving guides under abnormal strain.

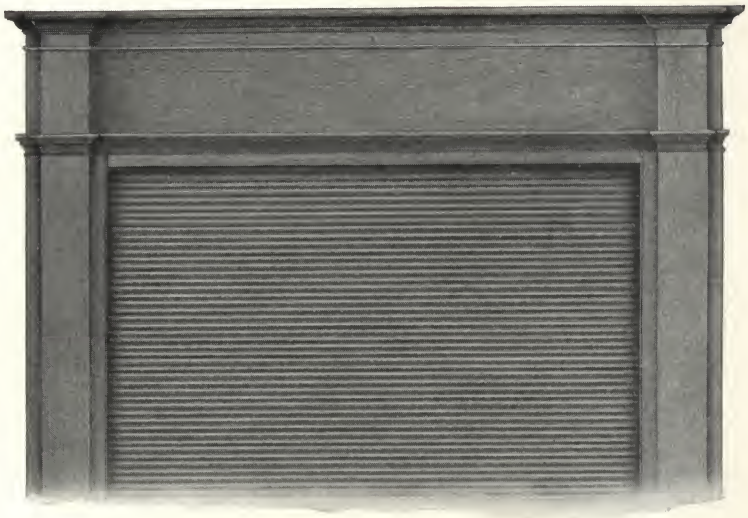
Brackets—Heavy grey iron castings with mouth and stops cast integral and with high factor of safety. Bearings of large proportions for barrel spindles.

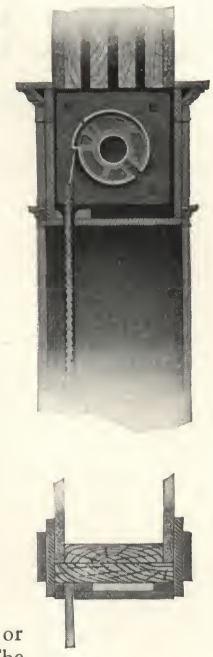
Adjustment Wheel—Mounted at end of bracket for increasing or decreasing tension on counterbalance spring.

Hood—Neatly formed of hot galvanized sheet steel reinforced with beads and flanges.



WOOD ROLLING DOORS and PARTITIONS





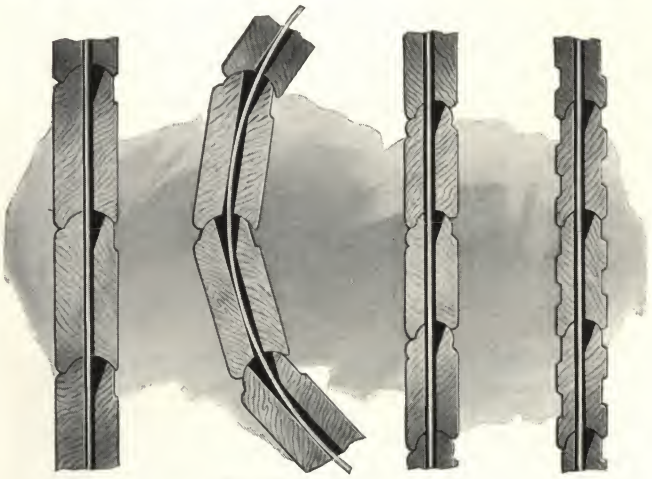
Kinnear Wood Rolling Doors and Partitions are designed primarily for interior use in schools, churches, etc., for subdividing large rooms. They lend themselves well to architectural treatment. They may be concealed in paneled casements, relieved by moulds and cornices to produce the desired effects. The wood of which the slats are made, as well as color tones, can be made to harmonize with room interiors.

Wood Rolling Doors are also very practical for exterior uses, in cases where chemical action is liable to deteriorate metal, such as around chemical plants and roundhouses.

They can be operated manually, mechanically or electrically, depending upon size. Operating devices, when furnished, can also be concealed in the casing. As the application of these doors depends so much on the individual building design, it is desirable to call on Kinnear Engineers at the time the building plans are being prepared.

CONSTRUCTION

Wood Rolling Doors operate substantially the same as Steel Rolling Doors. The curtain is composed of artistically shaped slats made of long leaf pine, cypress, quarter-sawed oak or birch, assembled on phosphor bronze tapes. The opening through which the tape or ribbon passes is so shaped that during flexure of the curtain there is no change in the relative length of the tape or curtain. Nor is there any danger of pinching the tape. Illustration shows how the curtain coils on a barrel in the casement. This door can also be arranged for mounting on the face of the wall. Casing and grooves are not supplied by Kinnear, but should be included in the general carpenter work. Slats can be finished, as desired. Slats No. 24 and 26 are for interior use and No. 27 for exterior use. They are given a preservative coat when used for exterior purposes.



No. 27 No. 27 No. 26 No. 24

Kinnear Wood Rolling Partitions, for separating class rooms in a church. All mechanism is concealed and slats are made of a wood to harmonize with interior finish. Posts between partitions can be removed

VERTICAL SLIDING DOORS

This is one of the Kinnear types especially suited for freight houses, piers and warehouses, where light through the door is essential.

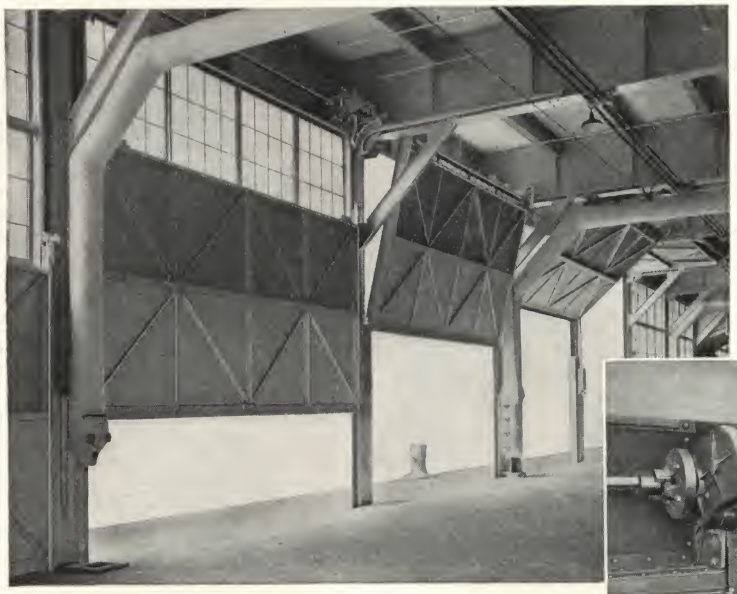
The door comprises two or more sections consisting of a trussed frame covered with sheet metal or corrugated iron, hung independently with chains connected with counterbalance weights. Operated by means of endless chain and suitable reduction gearing. Where doors are mounted on steel columns, guides and weight boxes should be incorporated as a part of the column, and should be supplied by the steel contractor, according to details supplied by Kinnear. This type can also be supplied to be mounted on the face of the wall, in which case the weight box and guides are furnished as part of the equipment. When a door of this type is desired, write for more complete information and detailed recommendations. (Doors can also be furnished in wood.)

A few of the 57 Kinnear Vertical Sliding Doors installed in a U. S. Post Office. The saving in floor and usable wall space is self-evident. And note their clean-cut appearance which is in keeping with modern building design

BIFOLDING DOORS

NO. 3, WEIGHT COUNTERBALANCED

This door is particularly suited for openings 12 ft. or higher, where heavy construction is desirable. Permitting the use of sash sections, it provides heavy duty service as well as admittance of light. Though built in both wood or steel, they are generally used for freight sheds and piers, thereby making steel preferable.



Illustrating how the two sections of a Bifold No. 3 telescope and then raise to an overhead position . . . out of the way

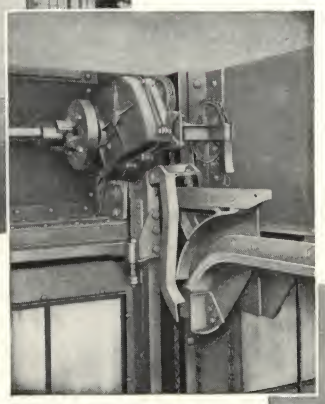
Constructed of two sections made up of heavy galvanized steel sheets applied with closely butted joints to an angle frame made of members 4 in. or larger. The lower section telescopes with the upper and then the two sections, as a unit, slide to the overhead position on heavy steel horizontal tracks. The door is counterbalanced by cast iron weights encased in the columns. Operation is usually by chain and reduction gearing. Through the use of high quality bearings in all bearing points, only a small amount of energy is required to start the door in motion.

Counterweights are connected to the door by block chain of high safety ratio, built of die formed links, producing not only a strong but also accurately running chain over the sprockets. To prevent the accidental drop of the door, in case of lifting chain breakage when operating such tremendous weight, an automatic safety lock is provided. A cam grip, which operates on an angle guide and is held open by the weight of the door, is closed by a heavy spring force. Should the lifting chain accidentally break, the cams will grip the angle guide and support the door in place. The action of this lock is similar to an elevator safety lock and prevents the door from dropping should either or both of the lifting chains fail.

When the door is used on the upper decks of a pier it may be arranged to provide a barrier. The lower section of the door can be subdivided into two parts, the lower part being about 4 ft. high and detachable from the upper part of this section. The door can be raised with the two parts operating as one section, or the lower part can be detached and allowed to remain in the opening as a barrier or guard to prevent pedestrians from passing through the opening.

The chain sprockets are driven by the hand chain through spur gear reduction. These reduction gears are of steel, having machine cut teeth and are enclosed in an oil-tight housing. All bearings supporting the counterweights or doors, are supplied with grease-tight roller or ball bearings.

Every detail is designed for heavy duty. It is the most advanced development in Pier Warehouse Doors that has been made.



A look at this mechanism is evidence of the excellent design and precision workmanship in a Kinnear Door

Kinnear Doors are as modern as this new Pier 88 which is fully Kinnear equipped

A portion of the 64 Kinnear Steel Bifold (No. 3) Doors, part of 123 Kinnear Doors, installed on Quebec Pier Sheds No. 25 and 26, Quebec, Canada. Sizes range from 18 ft. x 14 ft. 6 in. downward. The other doors are the vertical lift type, sizes 18 ft. x 9 ft. and smaller

Illustrating how the Kinnear Steel Bifolding Doors installed on Pier 88, New York Harbor, are arranged to provide a barrier on the upper decks. Lower section is disconnected and remains in place, allowing the upper section to be opened

The KINNEAR MANUFACTURING COMPANY, COLUMBUS, OHIO

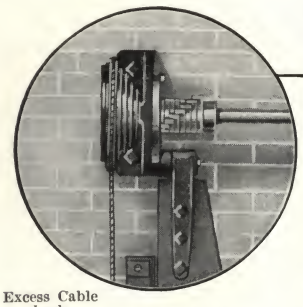
BI-FOLD NO. 5

Spring Counterbalanced

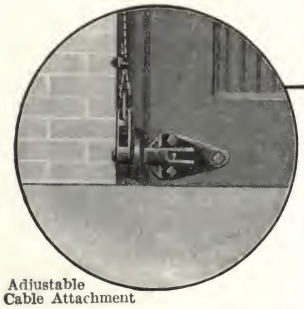
This is, without a doubt, one of the most practical bifolding doors for average size openings now on the market. It requires less clearance at both head and sides of opening than do most other types. Permitting the use of sash, approximately two-thirds of the upper section of the door can be used for the admittance of light. Constructed of either wood or steel, the Bi-fold No. 5 provides heavy duty service as well as the other operating advantages common to all Kinnear Upward-Acting Doors. Also, its simple and sturdy mechanism makes maintenance a negligible factor and renders quick and easy operation.

This door is of a jack-knife folding type, constructed of two leaves or sections, hinged at the center and attached to the wall with hinges at the top corners of the top leaf. The lower corners of the bottom section are carried on ball-bearing rollers which travel in guides attached to the wall. Cables are attached to the pins at each of the rollers and are wound on spiral drums. The door is operated up and down by driving the drums with hand chain, through reduction gear, winding or unwinding the cable as required.

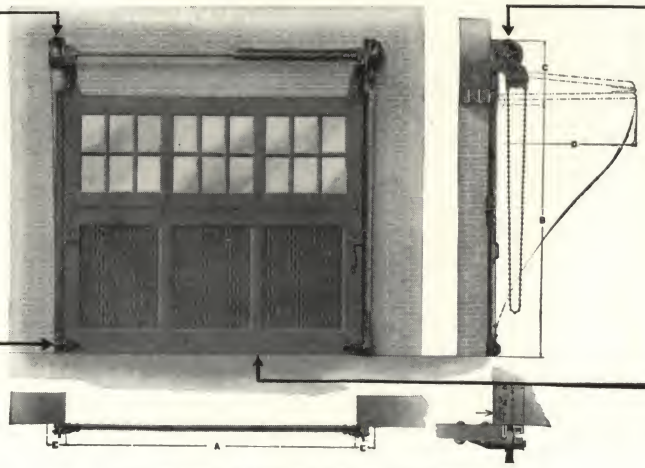
The doors are counterbalanced by torsion springs on a steel shaft placed above the lintel in the same manner as for steel rolling doors. This counterbalance can be very accurate and produce a very easy operating door.

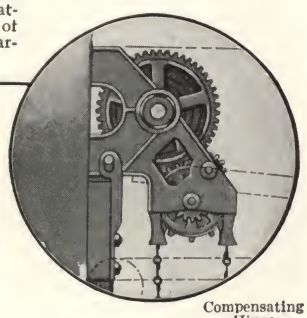


Excess Cable Lock

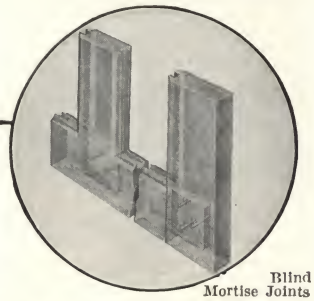


Adjustable Cable Attachment





Compensating Hinge



Blind Mortise Joints

CLEARANCES REQUIRED FOR BI-FOLD NO. 5

	Height B, feet									
	6	7	8	9	10	11	12	13	14	15
C, in.	26½	26½	26½	26½	28½	31	33	35	35	37
D, in.	46	52	58	64	71	78	85	92	98	105
E, in.	8	8	8	8	8	10	10	10	10	10

SALIENT FEATURES

Though the Bi-fold No. 5 embodies many distinctive features, both in the way of design and care in manufacture, the following describes the features illustrated and ones which are most pertinent.

In order to prevent the drums from being revolved in the wrong direction when the door is down, and thus unwind excess cable, the torsion shaft carrying the spring is provided with special lock set which does not permit the shaft to be revolved only so far as to unwind a required amount of cable. This is a safety feature which insures constant tension on the cable, holding it to the groove and the sheave and eliminating the possibility of slack.

The cable connection to one roller is provided with an adjustment for varying the tightness of the cable and this permits the bottom of the door to be leveled and to insure an even pull on both cables. Also note the heavy corner castings, peculiar to all hardware used on Kinnear Doors.

The top corners of the door are hinged on steel pins carried in fixed brackets attached to the wall. The revolving part of the hinge is attached to the door and carries a slotted pin hole. In opening the door, the action of the center hinge raises the top section a small amount, but this amount produces considerable binding in the hinges unless proper compensation is made. The slotted hole in the top hinge compensates for this vertical movement, eliminates all hinge binding and provides for an easy operation. This is an exclusive Kinnear feature.

All wood frames are 2¼ in. thick jointed together at the corners and at muntin connections with blind mortise joints, glued with waterproof glue and pinned in place with steel pins. THE KINNEAR MANUFACTURING CO. uses the blind mortise at all joints in spite of the fact that it is the most expensive construction. Open mortise joints permit moisture to enter the joints and the heart of the timber, which causes the timbers to rot or warp. The blind mortise being sealed with waterproof glue, excludes all moisture, thereby insuring lasting service.

A specal panelled Kinnear Steel Bi-folding Door (No. 5) on the Columbus Incinerator, Columbus, Ohio. Operated by chain and reduction gearing and couterbalanced with torsion spring. Opening overhead, it reduces space required for weighing platform

Floor and wall space is the "stock in trade" in a freight shed or warehouse and consequently is valuable. Here is a portion of the 52 Kinnear "space saving" Bi-folding Doors installed in a Chicago, Burlington & Quincy freight shed in Chicago

ROL-TOP DOORS

The Safety Counterbalanced Sectional Wood Door

Like other Kinnear Doors, the ROL-TOP Door opens upward affording maximum convenience, efficiency and permanence of service, combined with the advantage of the admittance of light. It is ideally suited for old or new residence garages, service stations, warehouses, factories, boat houses and other buildings.

CONSTRUCTION

Attractively paneled wood sections are hinged together with malleable iron hinges and fitted at both ends with heavy duty ball-bearing rollers. By means of these rollers, which operate in steel tracks or guides mounted on the jamb and extending horizontally back from the lintel, the door rolls to the overhead position. One or more springs (see Deluxe and Standard Models) connected to the door by Trulay plow steel cable accurately counterbalances the door. A special sealing device and heavy cylinder lock makes the door weather-tight and burglar-proof. It can be arranged for operating manually, mechanically or electrically. Sections can be either solid or arranged for glass. The door throughout is built to the highest standards of workmanship and materials.

ADVANTAGES

The advantages of ROL-TOP are numerous. It raises over snow, ice and swollen ground. Never sags, sticks or binds. Out of the way of wind or car, staying where it's *put*. Lends itself to all styles of panel designs. Saves wall and floor space, permitting cars and other objects to be placed within a fraction of an inch of the door. Perfectly counterbalanced, it opens easily, rapidly and smoothly. Strong, rugged construction insures permanence and insignificant maintenance.

DISTINCTIVE FEATURES

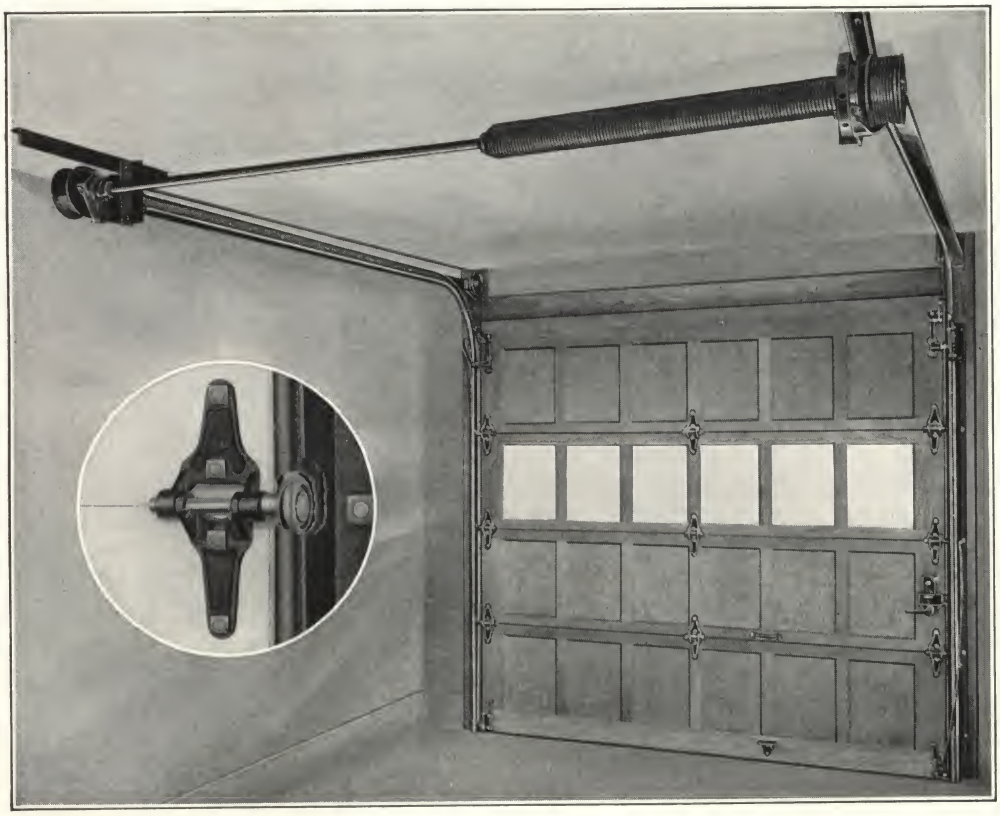
ROL-TOP embodies a number of special features that enhances its smooth, easy operation and adds to its permanence and dependability. They are:

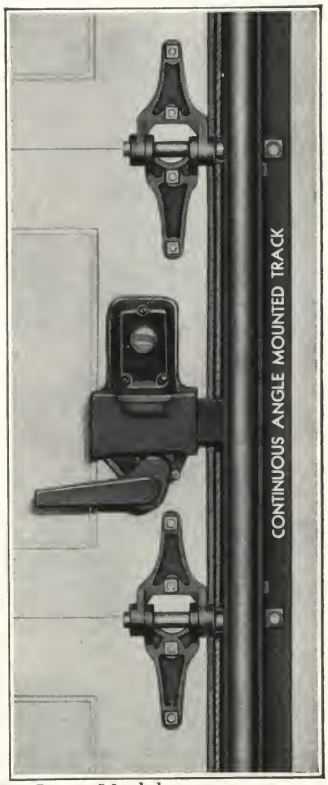
Safety Counterbalance — On the Deluxe Model ROL-TOP, a torsion spring with a high factor is mounted on a solid steel shaft, in a fixed, harnessed position. In case of accidental breakage, it cannot damage life or property. It is neat . . . nothing to jangle or flop around. Pulling uniformly on both sides of the door, it insures smoother, easier and more quiet operation. It is the same counterbalance principle that has made Kinnear Steel Rolling Doors *famous*.

Continuous Angle Mounted Tracks—ROL-TOP tracks are mounted on the jamb with continuous angles, providing a rigid, strong mounting that will stand abuse, reduce vibration and noise, and insures permanent alignment.

Heavy Hardware—Massive malleable iron hardware applied with through carriage bolts adds increased durability to ROL-TOP.

Closing Bracket—A throated bracket at the top of the door automatically forces the top section of the door snug against the





De Luxe Model

jamb and lintel, adding an extra precaution toward the elements.

Sealing Device—ROL-TOP is made weather-tight by an unique triple-contact "Keystone" sealing arrangement. Graduated rabbets on the end of the door fit into sloping wood or steel strips applied to jamb. Like a "keystone" the instant the door starts in the upward movement, it has free action. When closed, it fits snuggly to the jamb from top to bottom.

Ball-Bearing Rollers—Especially designed heavy duty rollers are used. They have a one-piece solid steel tread operating around hardened steel race and sleeve. Operating on a shaft made with a shoulder and independent of the hinge, it is *free floating* and yet locks the door securely in the tracks.

Cylinder Lock—A rugged spring-release slide bolt type of lock fitted with a standard make cylinder is furnished. It is operated by key outside and knob inside.

Special Framing—Rails and stiles are connected by blind mortise joints glued with casein waterproof glue. No open mortise joints (which permit the joints to absorb moisture and rot) are employed. Always specify closed or blind mortise joints.

Standard Model

STANDARD MODEL

Where original low price is more important than added years of unusual service, the Standard Model ROL-TOP is offered. It operates in the same manner as the Deluxe Model described on page 23. The door construction is also similar, but counterbalance is accomplished by the old conventional arrangement of two stretch springs placed parallel to the tracks. One spring is connected to each side of the door by means of pliable plow-steel cable running through ball-bearing sheaves. Hardware, angle mounted tracks, sealing device and lock are the same as used on the Deluxe Model. The Standard Model is built in any size from 8x7 ft. to 12x10 ft. and also in widths up to 16 ft. when height does not exceed 8 ft. While it offers a good door value, it should be carefully compared with the advantages of the Deluxe Model before a decision is made.

Considering the long service obtained from a garage door the difference in cost of the two models is negligible compared to the added counterbalance feature of the Deluxe Model.

Where access through a large opening without operating the main door is desired, the wicket or pass door offers an ideal arrangement, resulting in a saving of time, labor and heat. It is strongly built and equipped with spring latch and arranged for securely locking it into place before the major door is opened. Can be built in any size ROL-TOP

ROL-TOP is being specified by the major oil and tire companies. They have found that its convenience is not only more attractive to the public than old style doors but also substantially reduces maintenance of the service openings

ANY SIZE

While ROL-TOP is built in the seven stock sizes listed below, and is of the conventional panel design, it is built on special order in any practical size and of a great variety of woods and panel designs. Where individual architectural effects are desired, ROL-TOP is particularly adaptable.

STOCK SIZES

8 ft. x 7 ft.	15 ft. x 7 ft.
8 ft. x 7 ft. 6 in.	15 ft. x 7 ft. 6 in.
8 ft. x 8 ft.	16 ft. x 7 ft.
	16 ft. x 7 ft. 6 in.

When of the conventional panel design, any number of light sections (without glass) can be furnished without extra cost. Special designs furnished as specified.

In conjunction with a wide range of auxiliary equipment, some of which is briefly described on page 26, ROL-TOP can be adapted to meet any individual door requirements.

When confronted with a door problem or when desiring a special size of design, send us a sketch of what is needed and details will be supplied.

INSTALLATION

ROL-TOP is complete, being shipped with hardware applied to the door sections, complete erection instructions and all other materials, except glass and other materials that may be required to prepare the opening. A competent carpenter can therefore easily install it in old or new buildings . . . the average stock size garage doors requiring approximately 3 to 4 hours' time for installation.

Showing the chain and gear mechanism employed when door is beyond a size practical for manual operation. Recommended on all extremely large doors. When used, the door is also equipped with a device for synchronizing the movement of the door with the reduction gearing, a device which also starts the door in its downward travel

For clearances, opening preparation, etc. see page 27. As noted, unless the door is applied to steel it is recommended that the opening be framed on the inside with 2x6-in. timbers, to provide a smooth, secure foundation for vertical tracks. Hangers for horizontal tracks preferably steel furnished by others.

In case of large installations, when the owner desires, Kinnear Trained Erection Crews may be secured for handling the complete erection.

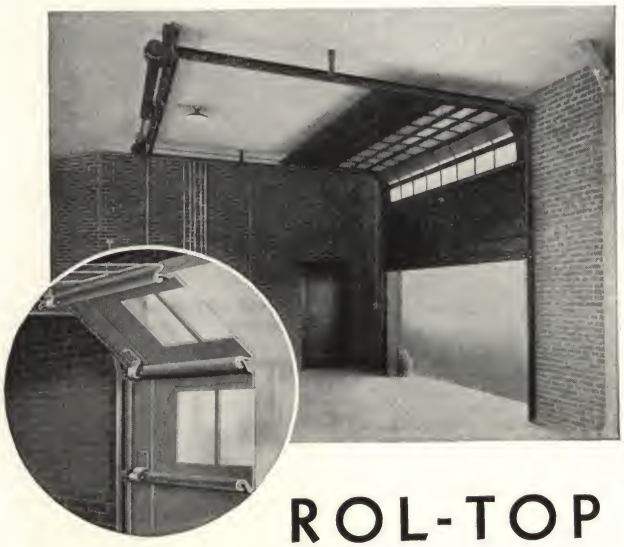
DATA WHEN ORDERING

To insure against error, it is recommended that a sketch of the opening condition (see page 27 for dimensional requirements) be furnished at the time of ordering, noting width of opening from jamb to jamb, height of opening from floor to lintel, type of wall and jamb construction (if the recommended 2x6-in. timber framing is not used), headroom and side clearance available, desired clearance under horizontal tracks and distance back from the face of wall for horizontal tracks. Also note number and location of sash sections (if one is sufficient it will be third from bottom unless otherwise specified), whether door is to be primed and if locks on two or more doors are to be keyed alike. Give current characteristic if door is to be motor operated.

Where ROL-TOP Doors are installed in lubritoriums they are provided with special hi-lift tracks, which carry the door high enough to clear the hydraulic lift. As illustrated below, this type also has counterbalance spring placed above the lintel

DESIGNED *and* BUILT *to* MEET INDIVIDUAL REQUIREMENTS

STEEL ROL-TOP



By combining the durability of a steel door with the convenience and facilities for light of the overhead type of door, the Steel ROL-TOP is becoming increasingly popular for heavy duty uses, such as factories, warehouses and commercial and industrial buildings. It will withstand excessive hard usage, and being fire repellant affords a degree of fire protection.

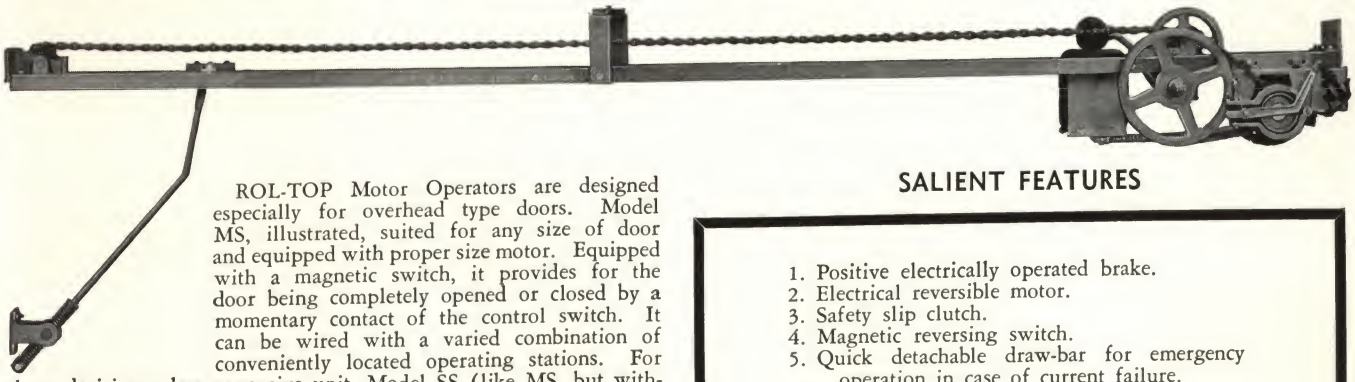
In general, the advantages, construction, operation and installation are similar to the wood ROL-TOP described immediately preceding. The door proper is composed of interlocking sections approximately 15 in. wide, made up of heavy steel plates with rolled beads, which not only form the hinge but also provide re-enforcement for the door sections (see illustration of interlocking hinge). Any number of sections can be provided for sash and when desired metals other than steel can be used.

A rugged lock with standard make cylinder can be operated from inside or outside. Counterbalance is of the "Safety" type composed of torsion spring on a solid steel shaft.

Conforming to Kinnear standards, this is a door ruggedly constructed of first quality materials. It is practical for many uses in old or new buildings.

Detailed specifications will be supplied upon request.

ROL-TOP MOTOR OPERATOR



ROL-TOP Motor Operators are designed especially for overhead type doors. Model MS, illustrated, suited for any size of door and equipped with proper size motor. Equipped with a magnetic switch, it provides for the door being completely opened or closed by a momentary contact of the control switch. It can be wired with a varied combination of conveniently located operating stations. For those desiring a less expensive unit, Model SS (like MS, but without magnetic switch, electric brake and with friction clutch) can be furnished for stock doors up to 150 sq. ft. in area but not exceeding 12 ft. in height. With the Model SS, it is necessary to make constant contact of the control switch—hold the button depressed until opening or closing of the door is completed. Motors on both models are of standard make and range from ¼ hp. up, depending on size of door to be operated.

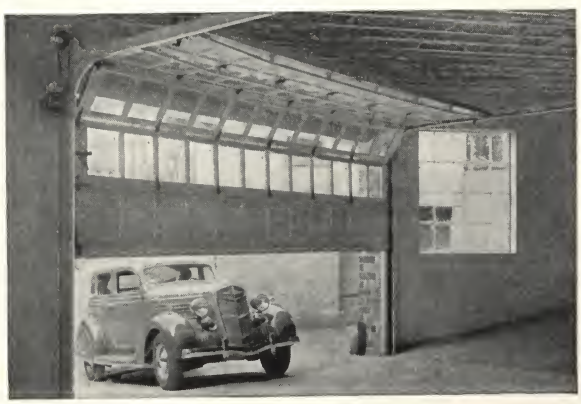
Write for special pamphlet giving more complete details. Where conditions do not permit use of the ROL-TOP operator, one of Kinnear's other type power units may be applicable, in which case recommendations will be made.

SALIENT FEATURES

1. Positive electrically operated brake.
2. Electrical reversible motor.
3. Safety slip clutch.
4. Magnetic reversing switch.
5. Quick detachable draw-bar for emergency operation in case of current failure.
6. Cut gear and pinion.
7. Graphite and bronze oil-less bushings.
8. Accurately, adjustable screw-type limit switch.
9. Belt tension tightener.
10. Three-button wall-mounting operating station.
11. Steel roller chain.
12. Roller and chain takeup.
13. Spring cushioned draw-bar.
14. Low voltage control on standard current.

The Standard ROL-TOP Operator. The traveler on the continuous chain gives a direct center pull on the door, necessitating only a small motor. A convenient, neat and economical arrangement for the majority of needs

Showing a special application of the ROL-TOP Motor Operator and a ROL-TOP Door. Operator directly drives the shaft on which counterbalance spring is placed. Particularly applicable where headroom is at a premium



SPECIFICATION DATA–ROL-TOP DOOR

DOOR SECTIONS

Construction—Rails and stiles are connected by blind mortise joints glued with casein waterproof glue and securely pinned with steel dowels. No open mortise joints (which permit the joints to absorb moisture and rot) are to be employed. Sections are approximately 2 ft. high and panels approximately 12 in. wide except on special orders. Sections ship-lapped and have graduated end rabbet to fit ROL-TOP special wedge type weatherproof sealing device.

Thickness—Stock and special sizes not exceeding 8 ft. wide and 8 ft. high will be furnished with stiles and rails either 1⅜ in. or 1¾ in. Stock sizes 15 ft. and 16 ft. wide are 1⅜ in. thick, reenforced with Kinnear's special trussing members. All special sizes exceeding 8 ft. by 8 ft. are 1¾ in. thick, with doors over 12 ft. 2 in. wide reinforced with steel truss members.

Reinforcing—All doors over 12 ft. 2 in. in width are reinforced with Kinnear's special steel trussing bar which minimizes the natural tendencies of wood to warp and deflect, increasing door's life of service. Doors under 12 ft. 2 in. in width can be reinforced if specified.

Wood—Stiles and rails of doors of standard design A1 spruce with panels of ⅜ in. three-ply fir. Special woods and panels can be furnished if specified.

Glass Section—Any number of sections can be arranged for glass. Weight of glass affects counterbalance; therefore, type of glass to be used should be specified. For uniform balance glass of double strength or lighter is preferred. Panels are framed with Ogee $\frac{5}{16}$ in. moulding.

Special Designs—Special woods and special paneling effects can be furnished to meet individual requirements. When such is desired send specifications to Kinnear and special recommendations will be furnished.

COUNTERBALANCE

Deluxe Model ROL-TOP is provided with safety counterbalance; a torsion spring shaft—a single or multiple springs mounted around a solid steel shaft—a principle of counterbalancing employed by Kinnear for 39 years. It provides for simple adjustment, easy erection, quiet operation and safety. Bottom of door is connected to the counterbalance shaft by heavy pliable plow-steel cable operating over ball-bearing sheaves and scored drums of large diameter. The Standard Model ROL-TOP is counterbalanced by two stretch springs, one running parallel to each horizontal track and connected to bottom of the door by pliable plow-steel cable which operates over ball-bearing sheaves.

HARDWARE

Tracks—Moderate size doors equipped with 2-in. steel tracks. Large doors equipped with 3-in. steel tracks. All vertical tracks are mounted on a continuous angle iron, providing a rigid, solid, heavy duty member.

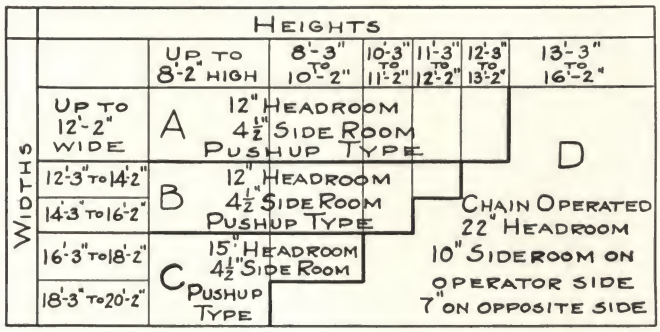
Rollers—Ball-bearing rollers which travel in the tracks are built with a one-piece solid steel case, which operates around a hardened steel ball-bearing race and sleeve. Operating on a shaft made with a shoulder and independent of the hinge it is *free floating* and yet locks the door securely in the tracks.

Hinges, etc.—All hardware applied to door is of malleable iron or manganese bronze of neat design and secured to door with carriage bolts—no screws. Hardware has a high grade protective finish.

Locking Device—A large cylinder lock of standard make in connection with slide bolt fitted with release spring. Lock is placed on right side when facing inside of door, except when otherwise specified. When two or more doors are furnished locks may be keyed separately or alike or can be masterkeyed to other locks as specified.

CLEARANCE REQUIREMENTS

The schedule below gives the headroom and sideroom clearances necessary to install special size doors not requiring any special or auxiliary equipment.



If 12-in. headroom is not available for doors within size limits of brackets A and B, doors can be installed in 8-in. headroom through the use of special equipment.

Sliding Post Installation—Where all doors are under 16 ft. 2 in. in width, a minimum headroom of 20 in. is required. If any door is over 16 ft. 2 in. in width, a minimum of 30 in. is necessary.

Add 6½ in. to the above clearances if motor operation is required.

Where any of the above clearances are not available, it is advisable to write Kinnear to see if any special arrangements can be offered.

SHIPPING DATA

Crated for shipment in sections with hardware applied and other materials, except glass.

AUXILIARY EQUIPMENT

Through various auxiliary equipment, the application of ROL-TOP is very elastic. When needing equipment not listed below, write Kinnear for special data.

Chain Hoist—For operation of large doors by means of endless chain and reduction gearing. Compact unit designed to exactly suit ROL-TOP.

Wicket Door—A small pass or entrance door. May be built within any large ROL-TOP. A very handy arrangement.

Movable Post—Sliding or swinging center mullion to permit the use of two or more doors in a single large opening.

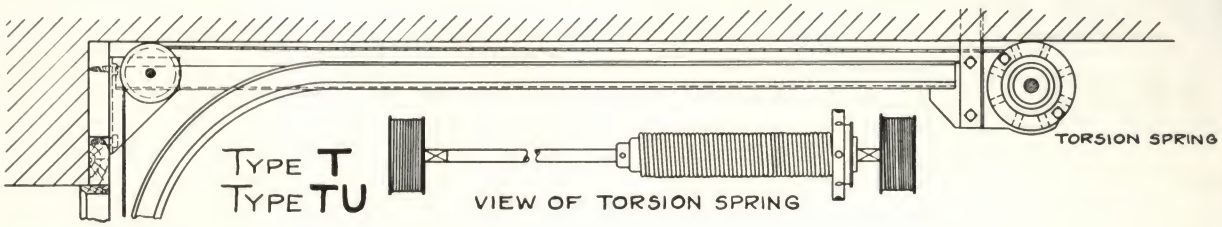
Automatic Opener—For raising a door automatically by the pull of a cord. Especially suited for fire stations.

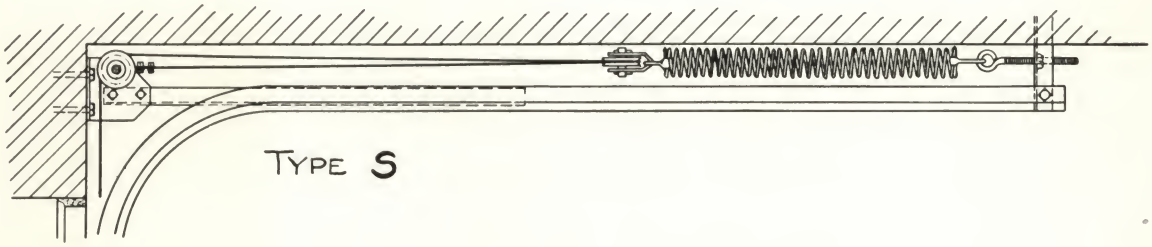
Lubritorium Design—Special counterbalance and track arrangement for carrying door sufficiently high to permit use of hydraulic lifts.

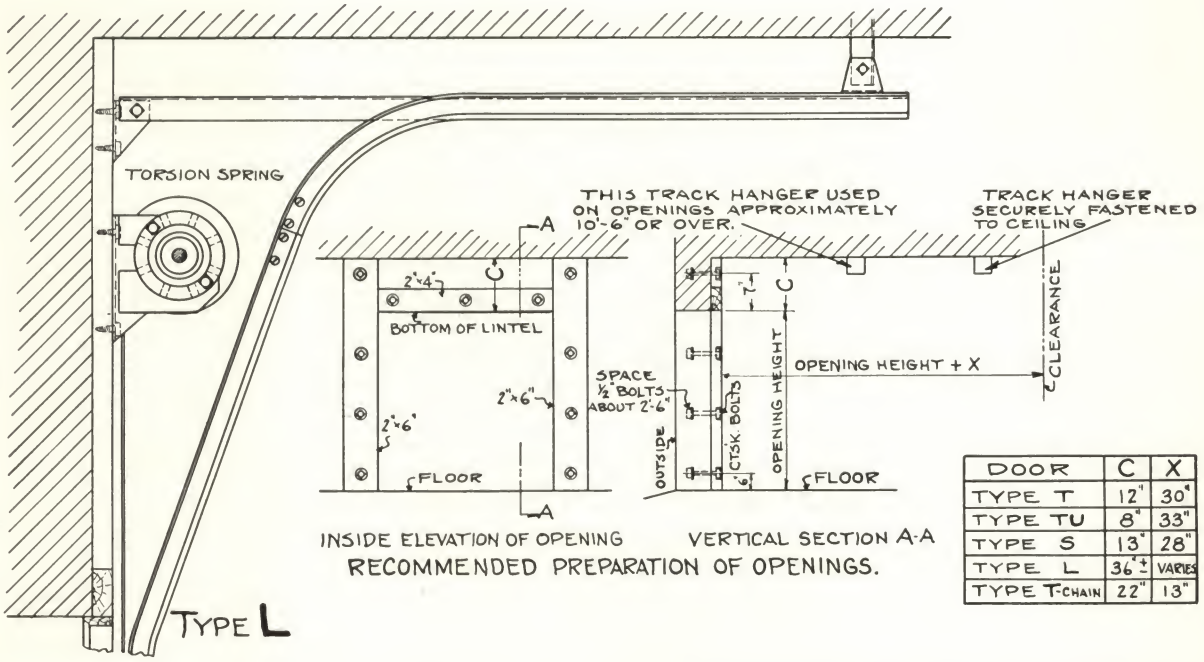
WEATHERTIGHT SEALING DEVICE

The ROL-TOP Door is made weathertight through an ingenious triple-contact arrangement for making it fit tight to the jamb. It consists of a graduated rabbet on both side edges of the door, which is wide at the bottom, decreasing in depth as it nears the lintel. A strip of wood fastened to the 2x6-in. on inside face of wall is placed in a slanting position to fit snugly in the rabbet when door is closed. This makes a contact in three directions on the end of the door.

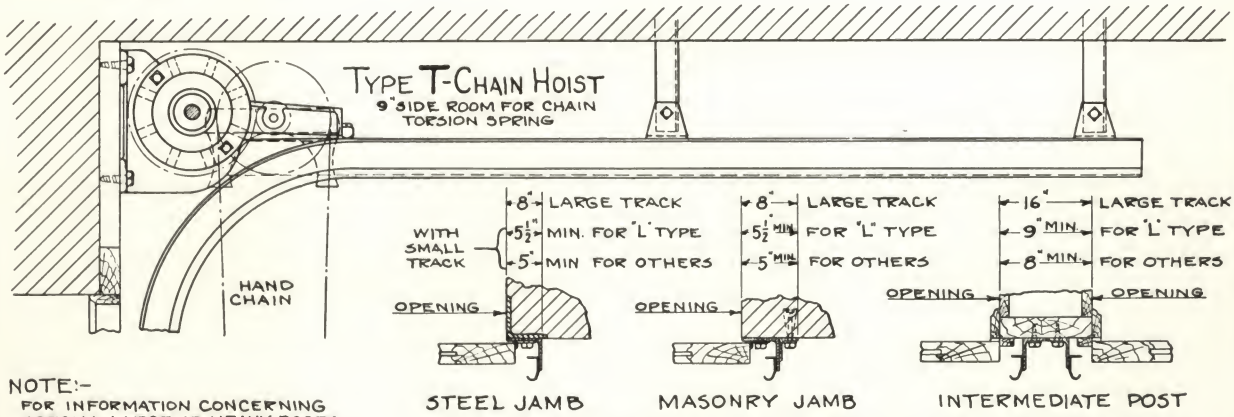
This graduation gives the door free action because the instant the door is raised the space between the rabbet and strip steadily increases. A "keystone" in principle.







DOOR	C	X
TYPE T	12"	30"
TYPE TU	8"	33"
TYPE S	13"	28"
TYPE L	36" ±	VARIES
TYPE T-CHAIN	22"	13"



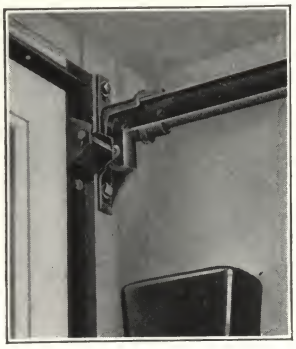
NOTE:-
FOR INFORMATION CONCERNING SPECIAL LARGE OR HEAVY DOORS, CONSULT THE KINNEAR MFG. CO. ENGINEERING DEPT.

Details of Counterbalance and Clearances Required for ROL-TOP Doors

TIP-TOP DOOR HARDWARE

Convenient—Economical—Permanent

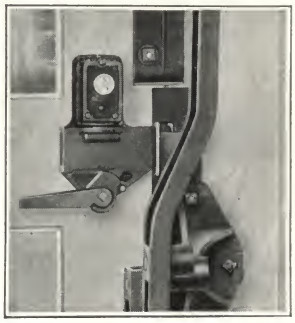
TIP-TOP is a complete, permanent, simplified set of hardware for converting old or new swinging, folding or sliding garage doors into overhead operation. While designed primarily for the residence garage, it is practical for any opening of a moderate size. As illustrated, the sections of the door are bound into one piece and pivoted by a special lever arrangement on each jamb. Rollers applied to the top corners of the door operate in horizontal overhead tracks, so that when the door is swung out it slides back overhead. Weights on the "balance-lever" compensate for the weight of the door, making it easy to operate at any point.



ADVANTAGES

A door equipped with TIP-TOP hardware raises over snow, ice or ground obstructions. Being held, when open, in the overhead position by the strong steel tracks it is safe, *stays where it is put,* out of the way of wind or moving car, and does not require any floor or wall space. Perfectly counterbalanced it operates easily, quietly and smoothly at any point. When closed, it is weathertight and burglar-proof. Having few moving parts, all of which are ruggedly built, it is a door of exceptional durability. Complete and easily applied, it can be installed with a minimum cost.

Showing the application of TIP-TOP to the standard two section swinging door. Improves appearance of garage and affords year around convenience and operating ease



FEATURES

Counterbalance — A "balance-lever" provided with weights, functioning like a balance scale. New in design but incorporating one of the oldest and yet simplest principles of counterbalance. No complicated mechanism, nothing to require adjustment.

Vertical Seal—A 2 in. vertical movement unseals the door, raising it over ground obstructions. This movement not only seals the door to the weatherstrips but also locks it against outside pressure at 4 different points.

Steel Weatherstrips—Provided as integral part of the equipment.

Cylinder Lock—Standard cylinder with rugged lock, operated outside by key and inside by knob.

Weights—Neatly designed. Of varying sizes so their addition or removal will accurately counterbalance the particular door.

Construction—Rugged, simple and fool-proof. Built of best quality materials so as to withstand years of hard, rough usage.

INSTALLATION

Packed as a complete set with detailed installation instructions, TIP-TOP can be easily installed by an ordinary carpenter, with minimum preparation and alteration of the opening.

SPECIFICATIONS

Model A TIP-TOP is suited for doors up to 8 ft. wide by 6 ft. 9 in. to 8 ft. high where the two or more sections do not exceed a total weight of 200 lbs. Requires only 3½ in. headroom and side clearance. Overhead tracks and arch of "balance-lever" requires no special clearances and does not reduce storage space. For information on TIP-TOP suited for larger doors, write Kinnear.

A three-section folding door equipped with TIP-TOP. Sections bound into one piece with angle irons, literally floats up overhead and is held safely in place by the steel tracks

SPECIAL USES FOR KINNEAR DOORS

KITCHENETTE DOORS

With space at a premium in apartment house design, Kinnear Interlocking Steel Rolling Doors have an important place; for closing off kitchenettes, dressing compartments, and storage compartments. Coiling above, with all mechanism concealed from sight, they require no usable space and are neat when opened or closed. A special flat surfaced slat, permitting any type of decorative finish, is used. Counterbalanced with a spring, they open or close with almost the ease of operating a window shade. They can be made as an integral part of the kitchen cabinets or installed in reveals provided in the building walls. The illustrations show one of 179 Kinnear Doors, 5x7 ft. in size, installed in the Tudor Apartments, New York City. Both the owners and the tenants of the building have expressed considerable enthusiasm over the convenience of these doors.

Though the general design of Kinnear Doors for this purpose is described elsewhere in this catalog, write for special recommendations when considering this type of equipment.

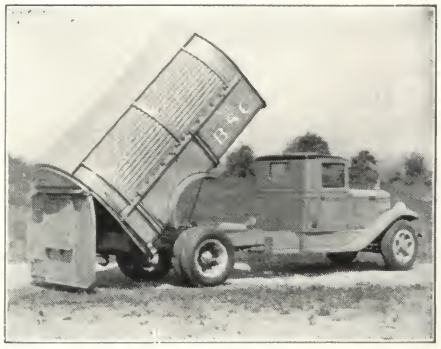
If Kinnear Engineers have the opportunity to work with the architect at the time the building is designed every detail of the installation can be most practically worked out.

TRUCK DOORS

Garbage trucks used by the city of Baltimore equipped with Kinnear Steel Rolling Doors. Mr. W. Rayner Straus, Baltimore Public Works Engineer, writes in part: "We wish to compliment you on the excellent door you have supplied"

Kinnear Steel Rolling Doors are ideal for numerous styles of trucks. Rolling up in a small compact coil, they are out of the way and allow the truck to run close to the loading platform. Spring counterbalanced, they open or close easily and quickly. When closed, they seal the opening against the elements and dirt. Built of steel, they withstand hard usage, and are burglarproof and fireproof. In case of accidental damage, one or more of the slats can be quickly replaced.

Kinnear Engineers can design a Steel Rolling Door to exactly suit your truck door needs—whether it be delivery truck, garbage truck or transport truck. Compared to the advantages they afford, you will find Kinnear Truck Doors very reasonably priced. Consult Kinnear when buying additional trucks.



Another purchaser writes: "I am thoroughly sold on your doors and assure you that all my future trucks will be equipped with Kinnear Doors"

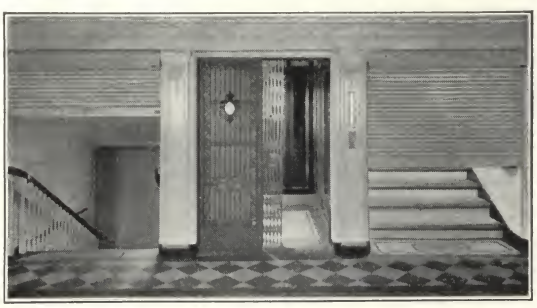
MARINE DOORS

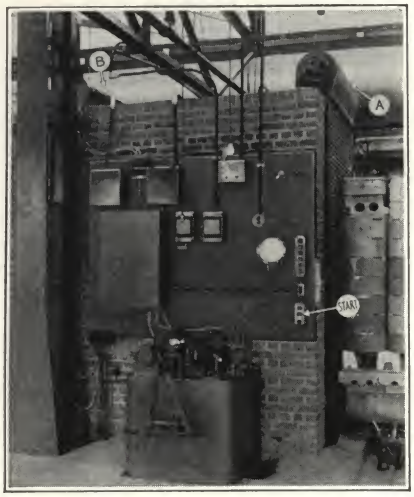
While previously used in numerous ways by the marine industry, the design of Kinnear Doors readily suggests itself for many new and practical adaptations to marine use. This is particularly true with the more rigid requirements that are being established for fire protection in ship construction. Having proved their merit as a positive fire guard on commercial and industrial establishments, they are excellent for the protection of ship passageways, stairways, and elevator shafts. They prevent drafts which cause the spread of fire, and also are built to withstand intense heat. By the use of a powerful push-down spring, their automatic closure is made positive. A safety governor regulates the closing—thus preventing injury to persons in the opening when the door is closed. Counterbalanced at all times, a person can manually raise them to make a quick exit.

The fact that Kinnear recently equipped the hangers on Government airplane carriers with special built doors 38 ft. 8 in. x 17 ft. in size—doors to withstand tremendous water and wind pressures—illustrates in a small way the ability of Kinnear to cope with various marine problems. Write for special recommendations.

Left:
Kinnear Doors to close passenger cabins of a ferry in San Francisco Harbor

Right:
The prevention of draft and the spread of fire down a ship stairway is accomplished by this Kinnear Fire Door. When open, it is completely concealed





CORE OVEN DOORS

The practicability of Kinnear Steel Rolling Doors for core oven use as well as Kinnear's ability to cope with difficult problems can be illustrated by a brief description of this pottery kiln installation. The picture shows the charging end of a pottery kiln. It is provided with two Kinnear Core Oven Doors, so arranged as to form an airlock, thereby making it possible to make the charging operation entirely automatic. Kinnear also furnished the complete electrical control.

The operating cycle is briefly as follows: The attendant presses the "Start" push button, door "B" closes and the pusher equipment returns to pick up the ingoing car. When door "B" reaches its closed position, door "A" opens, allowing the pusher to pick up the loaded car by the front end. The car is then pulled into the vestibule and immediately door "A" closes. As soon as door "A" closes, door "B" opens and the car is pushed into the kiln. This permits approximately one and one-half cars more per day to be run through the kiln as well as reducing the loss from warped ware, and so is quickly paying for this Kinnear installation.

If you have any similar problems, Kinnear will be glad to study the conditions and submit complete and detailed layouts and recommendations. Our specialized door experience insures a practical solution.

X-RAY VAULT DOORS

The door illustrated is a special Kinnear Door installed for the American Manganese Steel Company, Chicago, Illinois, for covering an opening in a large X-ray vault where large steel castings are inspected with X-ray. The situation required particular attention. In order to insulate the door against the penetration of the X-ray, the door required a covering on the inside of lead ⅜ in. thick. This lead covering was mounted on a wood door of a solid thickness of 2¼ in. The total weight of this door and covering was approximately 4500 pounds. The size of the opening was 12 ft. high.

The door is raised in thirty-five seconds and lowered in approximately the same time.

The operation is effected by winding ⅝-in. steel cables, which were attached to the door over a large drum driven by electric motor, through gear reduction housed in an oil-tight box. This operator is provided with a dual control, which gives protection against the door over-running and striking either the bottom of floor slot or the stops at the top.

In addition to this type of door, Kinnear Steel Rolling Doors are ideal for X-ray rooms in hospitals, photographic dark rooms, etc. They provide a device for quickly sealing any opening against light.

ROUND HOUSE DOORS

Because of their convenience and saving in space, Kinnear Interlocking Slat Rolling Doors are ideal Round House Doors. Built either in wood, such as described on page 22, or of aluminum interlocking slats, they withstand hard usage as well as withstand the effects of the chemicals present in the atmosphere near a round house.

The illustration at the left shows part of 8 Kinnear Doors, 12 ft. 5 in. x 17 ft. recently installed at Lima for the New York, Chicago, St. Louis Railroad Company. These are built of cypress and operated by chain and reduction gearing.

In the modernization of railroad equipment, Kinnear Doors should be carefully investigated, not only for round house use but also freight sheds, stations, and yard buildings.

Washington, D. C.: The magnificence of the Supreme Court Building is evidence of the care and thoroughness with which the materials used in its construction were selected. Part of the Kinnear Rolling Doors installed in the large service openings have special perforated slats to provide desired ventilation.

Evidence!

Jobs that tell of Kinnear's Ingenuity and Dependability:

New York, N. Y.: In St. John's Terminal, 119 Kinnear Steel Rolling Doors, of which 73 are electrically operated, are giving regular and faithful service.

Chicago, Ill.: The gigantic Merchandise Mart contains 169 Kinnear Steel Rolling Doors—affording its owners and occupants unestimated convenience and economies.

Cincinnati, Ohio: The Union Central Life Building is equipped with 228 Kinnear Rolling Doors and Automatic Fire Shutters.

New York Harbor: Pier 32 and Pier 88, both of outstanding maritime interest, have 401 Kinnear Steel Bifolding Doors—almost 2 miles of continuous doors if placed end to end.

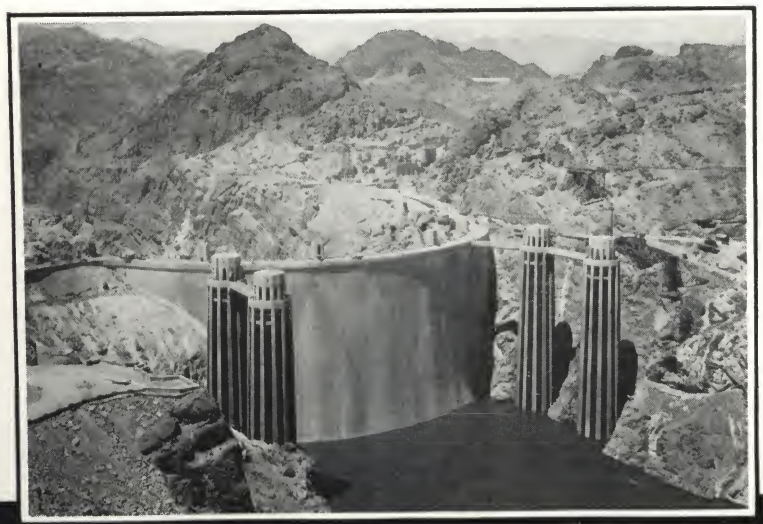
New York Harbor: A large portion of 261 Kinnear Rolling Doors installed in the Port Authority Warehouse are electrically operated. The saving in space alone reaches huge proportions in such a large warehouse installation.

Washington, D. C.: The battery of Kinnear Doors employed in the Federal Warehouse consists of both electrically operated and automatic fire types.

Cincinnati, Ohio: In planning the efficiency of the widely publicized Cincinnati Union Terminal, 71 Kinnear Rolling Doors were called to service.

Syracuse, N. Y.: On the new United States Post Office, a battery of Kinnear Rolling Grilles and ROL-TOP Doors may be seen in daily operation.

Boulder Dam, Nev.: The fact that a battery of Kinnear Aluminum Rolling Doors were used in this remarkable engineering project is quite significant. The exacting specifications to which the doors had to be manufactured is a further evidence of Kinnear's ability to successfully cope with any opening problem.



A KINNEAR *Sales Engineer Is Located Close At Hand*

USE HIM WITHOUT ANY CHARGE OR OBLIGATION

No opening problem is too difficult for Kinnear Engineers. This fact, plus Kinnear's international organization of experienced sales engineers, puts at your disposal expert assistance in the solution of any of your opening problems, regardless of where you may be located.

Branch offices are located in all of the larger cities of the United States. Other principal cities, in this and many foreign countries are serviced by District Salesmen who have long experience in the sale and installation of Kinnear Equipment. All these representatives will offer consulting service without obligation.

If you have a door problem of any kind, call our representative nearest you, and if he is unable to answer your questions he will gladly go to headquarters and get the information that you need. *This is part of Kinnear's Complete Door Service.*

The KINNEAR *Manufacturing Company*

820-870 FIELDS AVE., COLUMBUS, OHIO

BRANCH OFFICES

BOSTON, MASS., 294 Washington Street
NEW YORK, 30 Rockefeller Plaza, R.C.A. Building
PHILADELPHIA, PA., 1321 Arch Street
WASHINGTON, D. C., 410 Bond Building
NEW ORLEANS, LA., 530 Hibernia Bank Building
CLEVELAND, OHIO, 7704 Carnegie Avenue
CINCINNATI, OHIO, 6518 Tyne Avenue
DETROIT, MICH., 7710 Woodward Avenue
CHICAGO, ILL., 1919 Randolph Wells Building
SAN FRANCISCO, CALIF., 361 Brannan Street
PITTSBURGH, PA., 1052 Century Building

AGENTS IN PRINCIPAL CITIES

DESIGNED *and* BUILT *to* MEET INDIVIDUAL REQUIREMENTS

THE J. G. WILSON CORPORATION

ESTABLISHED 1876

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NEW YORK, N. Y.

FACTORY
P. O. Box 599
NORFOLK, VA.

CABLE: "WILCORP, NEW YORK"
OFFICES IN ALL PRINCIPAL CITIES

For Partitions, Wardrobes and Venetian Blinds, see File Index

Products

WILSON COMMERCIAL ROLLING STEEL DOORS.
WILSON UNDERWRITERS' LABELED STEEL DOORS.
WILSON SECTIONFOLD DOORS OPERATING OVERHEAD.

All Wilson Rolling Doors are made of open hearth or copper bearing steel, electrogalvanized.

TRADE-MARK

Where Used

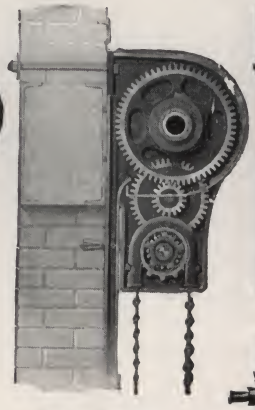
Warehouses, Factories, Garages, Breweries, Car Barns, Freight Stations, Piers, Terminals, etc.

Commercial Rolling Doors are made of Nos. 22, 20, 18 and 16 U. S. Standard Gauges. Underwriters' Labeled Rolling Doors are of Nos. 22 and 20 U. S. Standard Gauges.

TYPES, CLEARANCES AND GROOVES FOR COMMERCIAL ROLLING DOORS

Self-Coiling, Type S.C. 11

Doors are raised and lowered by handles on the bottom bar. Adapted to doors 12x7 ft. or less

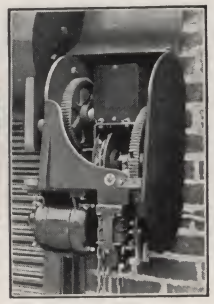


Chain-Gearing, Type C.G. 11

Usually used on doors over 12x7 ft. and up to 300 sq. ft. Gearing is simple or compound depending on size and weight of door. All parts are easily accessible for lubrication

Crank-Gearing Type K.G. 11

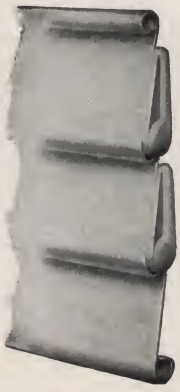
Used where operation on both sides of wall is desired



Wilson Motor Unit for Small or Large Doors

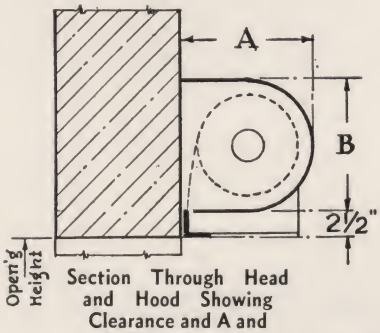
Equipped with push-button control, limit switch, Thermo Overload Relay, solenoid brake, and emergency hand chain

Big 4 Interlocking Slat

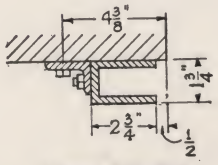


No. 2 Interlocking Slat with Fire Stops

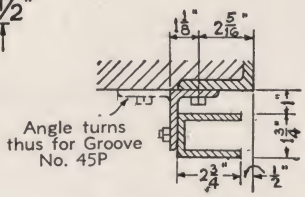
Coils and Grooves can be placed either on face of wall or between jambs



Section Through Head and Hood Showing Clearance and A and B Dimensions in Tables at Left



Groove No. 45A



Groove No. 45N

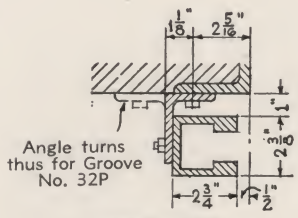
Grooves Nos. 45A and 45N are to be used when opening width is less than 14 ft. 0 in. and opening height is less than 16 ft. 0 in.

CLEARANCE SCHEDULE FOR COMMERCIAL ROLLING STEEL DOORS
SELF-COILING TYPES

Type SC-11 (on face of wall)			Type SC-22 (between jambs)		
Opening height	A	B	Opening height	A	B
Little No. 4 Slat			**Little No. 4 Slat**		
6′0″ to 7′0″	14″	14½″	6′0″	13″	13½″
8′, 9′ and 10′	15″	15½″	7′ and 8′	14″	14½″
11′	16″	16½″	9′ to 11′	15″	15½″
			12′	16″	16½″

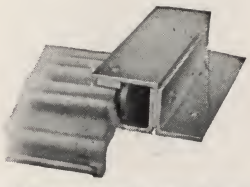
CHAIN OR CRANK OPERATED TYPES

Type CG-11 and Type KG-11 (on face of wall)			Type CG-22 (between jambs)		
Opening height	A	B	Opening height	A	B
Big 4 Slat			**Big 4 Slat**		
8′ to 10′0″	15″	15½″	6′ to 8′0″	14″	14½″
10′1″ to 14′0″	18″	18½″	8′1″ to 10′0″	15″	15½″
14′1″ to 16′0″	21″	21½″	10′1″ to 12′0″	16″	16½″
16′1″ to 18′0″	22″	22½″	12′1″ to 14′0″	18″	18½″
18′1″ to 20′0″	23″	23½″	14′1″ to 16′0″	19″	19½″
20′1″ to 22′0″	24″	24½″	16′1″ to 18′0″	21″	21½″
22′1″ to 24′0″	25″	25½″	18′1″ to 20′0″	22″	22½″
24′1″ to 26′0″	26″	26½″	20′1″ to 22′0″	23″	23½″
26′1″ to 28′0″	28″	28½″	22′1″ to 24′0″	24″	24½″
			24′1″ to 26′0″	25″	25½″
			26′1″ to 28′0″	26″	26½″



Groove No. 32N

This Groove to be used when opening width is over 14 ft. 0 in. and opening height is over 16 ft. 0 in.



Safety Groove and Wind Lock

WILSON UNDERWRITERS' LABELED STEEL DOORS

Underwriters' Labeled doors are classified by types in accordance with use, as follows:

Class "A"—Fire Wall Doors

Area of wall opening not to exceed 80 sq. ft.; neither width nor height to exceed 12 ft. *Two doors* are recommended, and may be hung on face of wall or between jambs, self-coiling or crank operation, and close automatically in case of fire. Wilson Type Nos. 31 to 35, inclusive, interlocking slat No. 2, 20 gauge.

Class "B"—Vertical Shaft Doors

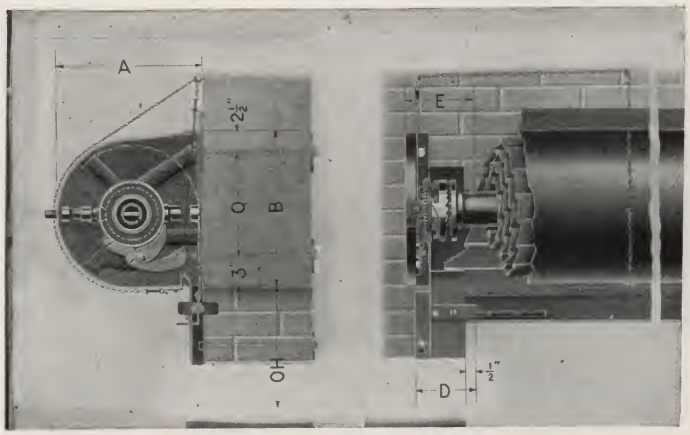
Area of opening not to exceed 80 sq. ft.; neither width nor height of opening to exceed 12 ft. Curtains may be hung on face of wall or between jambs, self-coiling or crank operation, and where required are automatic closing in case of fire. Wilson Type Nos. 21 to 26, inclusive, interlocking slat No. 2, 20 gauge.

Class "C"—Corridor and Room Partition Doors

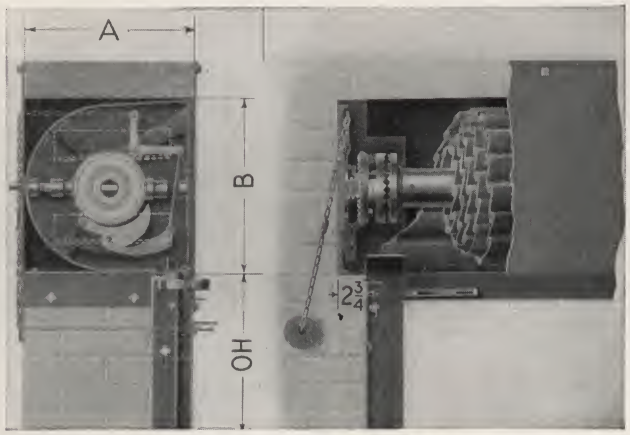
Same requirements as Class "B."

Class "D"—Exterior Wall Doors

Area of wall opening not to exceed 100 sq. ft.; neither width nor height to exceed 12 ft. Curtain may be hung on face of wall or between jambs, self-coiling, chain or crank operation, and, where permitted, may be automatic closing in case of fire. Wilson Type Nos. 41 to 51, inclusive, interlocking slat Little 4, 22 gauge.



Door Applied to Face of Wall



Door Applied Between Jambs

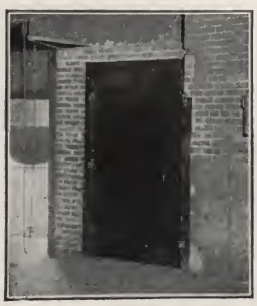
CLEARANCE SCHEDULE FOR UNDERWRITERS' LABELED ROLLING STEEL DOORS

Opening height	Class A, B and C Doors For requirements, see text above — No. 2 slat and fire stops					Opening height	Class D Doors For requirements, see text above — Little 4 slat and fire stops				
	A	B	Q	E	D		A	B	Q	E	D
6′0″ to 8′0″	16″	16½″	11″	Opening width under 8′–0″ equals 6″	Opening width under 8′–0″ equals 5¼″	6′0″ to 7′0″	16″	16½″	11″	Opening width under 10′–0″ equals 6″	Opening width under 10′–0″ equals 5¼″
8′1″ to 9′0″	18″	18½″	13″			7′1″ to 8′0″	17″	17½″	12″		
9′1″ to 12′0″	19″	19½″	14″			8′1″ to 12′0″	19″	19½″	14″		
12′1″ to 13′0″	20″	20½″	15″	Opening width over 8′–0″ equals 7″	Opening width over 8′–0″ equals 6¼″	12′1″ to 14′0″	22″	22½″	17″	Opening width over 10′–0″ equals 7″	Opening width over 10′–0″ equals 6¼″
13′1″ to 14′0″	21″	21½″	16″								

WILSON SLIDING AND SWINGING "AIR-KORE" DOORS

A Fireproof Air Chamber Door, Underwriter Labeled

A most effective fire retardant, this door has been tested by the engineers of the Underwriters' Laboratories, Inc., in Chicago. It was subjected to heat which was gradually raised to 1750°. After undergoing this terriffic heat test for one hour, the door was immediately subjected to a cold water hose stream test. After these tests, far more severe than would have been occasioned by an actual fire when in use, the door showed little deterioration, and to all appearances was "as good as new."



In addition, the Wilson "Air-Kore" Fireproof Air Chamber Door is practical and durable, rugged in construction and capable of withstanding hard usage. Covered with galvanized sheet steel, it is not affected by corrosion. It is simple and easy to operate, and, with its plain, not corrugated, cover sheets, presents a very pleasing appearance.

WILSON SECTIONFOLD DOORS OPERATING OVERHEAD

Improved Features of Construction

Through Tenon Construction—Prevents water pockets and increases strength.

Rustproof Hardware—No unsightly rust spots or gradual deterioration.

Every Bearing a Ball Bearing—Easy operation. Long life. Low maintenance costs.

Selected Kiln Dried Lumber—All lumber kiln dried in our own mills, insuring a custom-made door.

Panels Built Up with Waterproof Glue—Warpage and cupping reduced to a minimum.

Engineered Springs for Each Door—All springs made at our own plant for the individual door, thus guaranteeing a perfectly operating door.

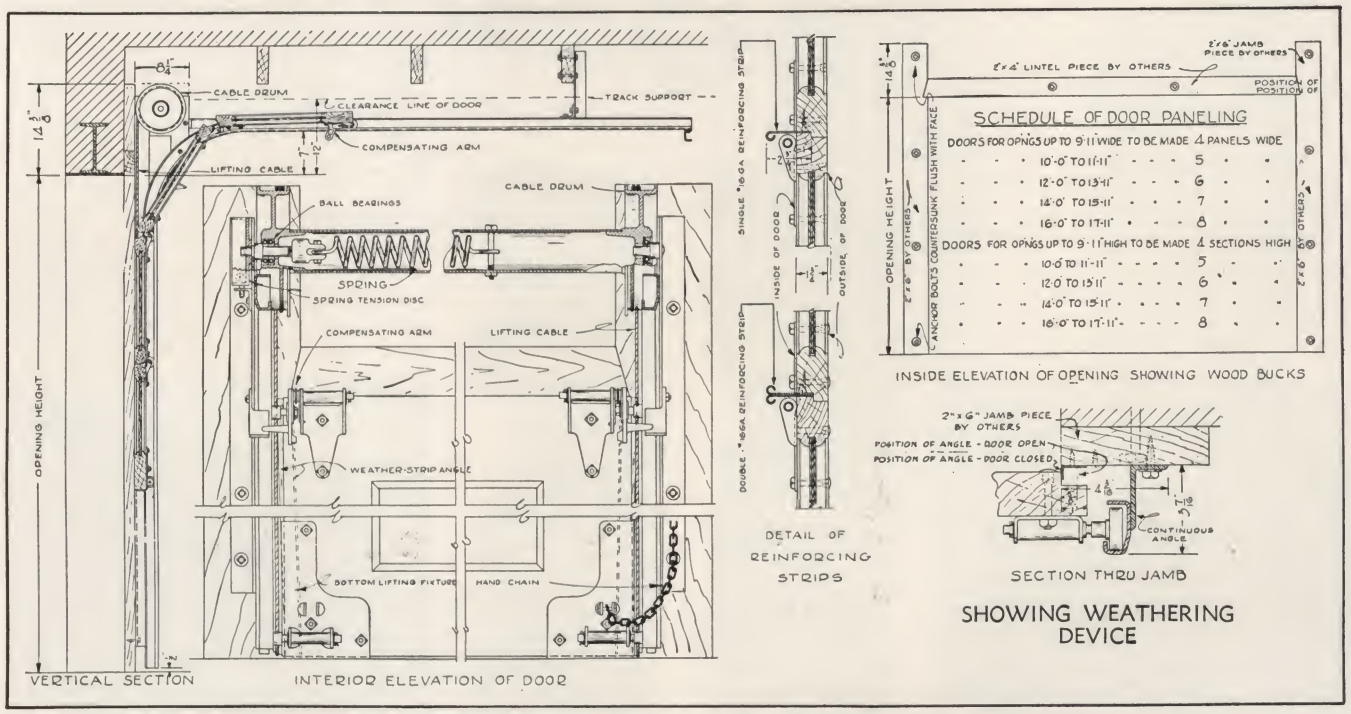
Continuous Vertical Track Members—Used instead of angle clips, insuring greater strength and rigidity.

Weathering Device—Steel angles mounted on inside face of jambs and sloping toward sill, engaging in sloping rout at sides of door, forming weatherproof joint by tight contact between door and angle when door is completely closed.

Furnished where desired without extra charge.

Guarantee

The guarantee of a manufacturer with a national reputation for sixty years is behind each Wilson Product.



Installation Details for Wilson Non-Geared Overhead Doors

These details in general also apply to the chain gear-operated doors. Complete installation details will be sent on request

Recommended Specifications to Secure Best Construction

(1) Sections—*Stiles and Rails*—1¾ in. thick; vertical grain clear spruce through-tenoned and steel doweled.

Panels—⅜ in., three-ply fir, built up with a waterproof glue.

Reinforcing Strips—Galvanized steel 16-gauge on all doors over 12 ft. in width or 16 ft. in height, so fastened to the section as to give protection against pressure equally from both sides and to prevent any sagging in the section when raised.

(2) Tracks—Hot rolled steel 13-gauge. All tracks painted. Vertical tracks to be attached to continuous back angles.

(3) Hardware—All door fittings to be of pressed steel, galvanized to prevent rusting. All rollers and sheaves to be ball bearing, and rollers, where used in carrying the weight of the doors, are to be of solid steel. Lock, with two-cylinder keys of the side type that may be operated from either side of the door, locking the door to the track, will be furnished unless otherwise specified.

(4) Counterbalance—All doors to be counterbalanced by means of helical oil-tempered springs, enclosed in steel tubing and mounted parallel with the opening between the two steel track brackets. An adjusting device for applying the proper amount of tension is to be located on the outside of the steel bracket.

Methods of Operation

Self-Coiling—Lifted by Tru-Lay Cables—Recommended on all doors up to 12 ft. in height, where the area is not over 150 sq. ft. and the thickness of the door, 1¾ in.

Note: Where heavy glass is used or the door is heavier than standard wood, we recommend chain gear operation.

Chain Hoist—Recommended on all doors over the sizes listed under Self-coiling; lifted by electric welded steel chain; all gears made of gray cast iron from cut steel patterns, the gearing mounted on the door brackets.

Type B Motor Unit—Mounted directly to the door bracket equipped with limit switch, solenoid brake and, in addition, with an emergency hand chain operator.

All motor equipment as furnished is operated by three-station push button control, equipped with magnetic switches and brakes to limit the movement of the door at the end of its travel. Constant contact control can also be furnished if desired.

THE R. C. MAHON COMPANY

Manufacturers of Rolling Steel Doors

DETROIT, MICH.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

For Mahon Kalamein Doors, Roof Decks, Acoustical Ceilings, Roof Sumps, see File Index

MAHON ROLLING STEEL DOORS MEET EVERY REQUIREMENT UNDER ANY CONDITION

Mahon Rolling Steel Doors are manufactured from the highest grade material obtainable. They are produced in many labeled and non-labeled types to meet every requirement of industrial or commercial use.

MAHON STEEL ROLLING DOORS
APPROVED BY THE UNDERWRITERS' LABORATORIES INC.

Standard Doors

Mahon Standard (non-labeled) Rolling Steel Doors are made with specially designed interlocking slats rolled from copper bearing electro-galvanized steel, aluminum or bronze. These slats are fitted with malleable iron end locks to insure perfect alignment and free, easy operation in the guides. The tubular roller shaft to which the shutter curtain is attached is exceptionally rigid, and operates in ball and bronze bearings fitted into the end brackets. End brackets are heavy gray iron castings. These are of numerous sizes and shapes to accommodate the many door sizes and the various types of operators.

The weight of the shutter curtain is counterbalanced by means of coil springs located inside the roller shaft. The tension of

Mahon Rolling Steel Door, 29x32 Ft.
One of thirty furnished for Pier No. 1, San Francisco Harbor

Mahon No. 1 Interlocking Slats
Showing arrangement of Malleable Iron End Locks as used on Mahon Standard Rolling Steel Doors

Mahon No. 2 Interlocking Slats
Showing arrangement of Malleable Iron End Locks as used on Mahon Standard Rolling Steel Doors

Mahon Rolling Steel Door
Installed at the Consolidated Paper Company's Plant, Monroe, Mich.

Mahon Rolling Steel Doors Installed in Pier No. 1, San Francisco Harbor

these springs is adjustable to provide perfect balance.

This feature, particularly important in manually operated doors, safely maintains the position of the shutter curtain at all times, and, in the case of electrically operated doors, relieves the load on the operating mechanism.

Installation

Mahon Rolling Steel Doors can be installed either on the face of the wall or in the door opening. Mounting on the face of the wall with guide channels clear of the door jambs is general practice. This method allows 100% clear opening and provides protection for the guides. However, in many instances where headroom is limited, or other conditions prohibit "face of wall" mounting, Mahon Rolling Steel Doors can be installed in the door opening between jambs.

In "between jambs" installations the height of the door opening is decreased, due to the insertion of the roller housing below the lintel (the amount depending upon the size of the door opening) and the opening width is also decreased due to the insertion of the guide channels on the jambs.

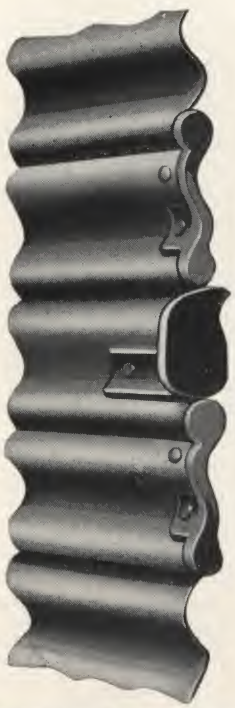
These objections may be eliminated in new construction, where "between jambs" installations are desired, by including built-in guide channels and providing space for the roller housing and operating mechanism in the original plans.

Intermediate Hinged Posts

In some instances where unusually wide openings are desired, it is more economical to use two rolling steel doors with an intermediate hinged post or removable post between. Mahon Rolling Steel Doors installed in this manner can be equipped with either mechanical or power operators, and can be made to operate simultaneously or individually as desired.

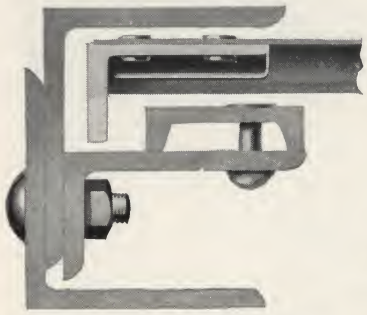
The intermediate post between doors can be released at the floor and removed or swung up clear of the opening after the doors are opened.

Typical Installation of Mahon Rolling Steel Doors with Intermediate Hinged or Removable Posts

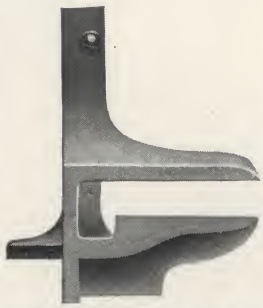


Mahon No. 1 Interlocking Slats
Showing application of Wind Lock Lug

Mahon No. 3 Interlocking Slats
Showing application of Wind Lock Lug



Cross Section of Guide Channel
Furnished with doors equipped with Wind Locks



Guide Mouth of Special End Bracket
Furnished with doors equipped with Wind Locks

Wind Locks

Mahon Rolling Steel Doors of unusual width are fitted with wind locks to eliminate the possibility of the door pulling out of the guides due to excessive wind pressure.

Special end brackets and guides are provided to accommodate the wind lock lugs which are attached to the interlocking slats at intervals between the regular iron end locks.

These wind locks are designed and installed so as to insure safe and easy operation even under extraordinary wind pressure.

Operation—Mechanical and Power Operators

Mahon Rolling Steel Doors can be furnished equipped with handles on the bottom rail, continuous chain gear operator, hand crank operator, or power operating units.

Handles—Doors of moderate size equipped with handles on the bottom rail, for manual operation, are perfectly balanced by means of an adjustable counterbalancing mechanism. They can be easily opened or closed by one person.

Chain Gear—The continuous chain gear operator for medium sized doors consists of a continuous chain, sprocket, and a series of gears. When installed on Mahon Underwriters' Labeled Rolling Steel Doors, the chain gear operator is equipped with an automatic release, which, in case of fire, disengages it simultaneously with the release of the automatic closing mechanism.

Hand Crank—The hand crank operator consists of a hand crank, gear box, shaft with universal joints, and a series of gears on the roller bracket. The crank can be located on either side of the wall, or, removable cranks can be furnished and the operator installed for operation of the door from both sides of the wall.

Power Operation—The Mahon Standard Power Operator is mounted directly upon the end bracket of the roller housing. It is a combination power and manual chain gear operator with a throw-out control lever, located within easy reach of the floor, by which the power operator is immediately converted into a chain gear operator for manual operation in case of failure in the electrical system.

This Mahon Standard Power Operator meets all requirements. It is so arranged in relation to the roller housing that no additional headroom is required, and it requires a minimum of side clearance outside the door guides.

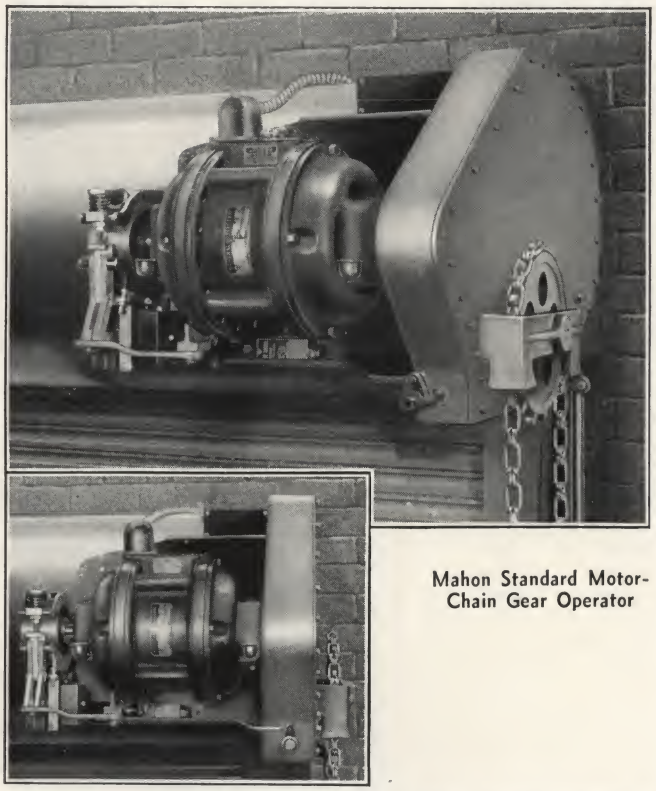
It is very compact and consists of an electric motor, reduction gears, an interlock, an automatic reversing switch, control switches, a solenoid brake and a throw-out control which operates the interlock, releases the brake, and engages the chain-gear clutch for manual operation.

Control is by means of a push button switch, including "open" and "close" buttons, and an emergency "stop" button.

The door is set in motion by pushing either the "open" or "close" buttons, and is automatically stopped in the open or closed position by means of a limit switch and a solenoid brake. The door can be instantly stopped in any position by pushing the emergency "stop" button.

All wiring and conduit to be furnished by others, but must be installed in accordance with wiring diagram furnished by THE R. C. MAHON COMPANY.

Note: Requests for estimates or bids on power operated doors must include information as to type of current available.



Mahon Standard Motor-Chain Gear Operator

Two separate operators combined in one. Either the motor unit or the chain-gear unit can be engaged or disengaged by merely changing the position of the throw-out lever which is located within easy reach from the floor. The motor, or any unit of the power operator, may be removed for repairs without affecting the chain-gear operating mechanism

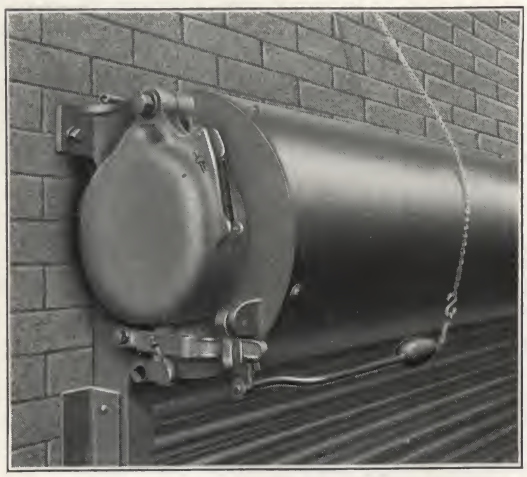
Fusible Link

Type used on Mahon Underwriters' Labeled Doors to release the automatic closing mechanism in case of fire

MAHON UNDERWRITERS' LABELED ROLLING STEEL DOORS

Mahon Underwriters' Labeled Doors are approved by the Underwriter's Laboratories, Inc., within certain limitations in total area as specified by the Underwriters for various opening classifications.

These limitations are based on requirements of the Underwriters' Laboratories, Inc., and apply to all fire doors of this type.



Mahon Governor and Release Device for Automatic Closing Mechanism
Used on Mahon Underwriters' Labeled Doors

Fire Wall Doors, Class "A"—Approved for fire wall openings not exceeding 80 sq. ft. in area.

Vertical Shaft Doors, Class "B"—Approved for vertical shaft openings not exceeding 80 sq. ft. in area.

Corridor and Room Partition Doors, Class "C"—Approved for corridor or room partition openings not exceeding 80 sq. ft. in area.

Exterior Doors, Class "D"—Approved for exterior wall openings not exceeding 100 sq. ft. in area.

Note: For Standard Label neither dimension of the above listed openings may exceed 12 ft. Mahon Rolling Steel Fire Doors, however, can be manufactured in strict accordance with the Underwriters' specifications and furnished with oversized label for larger openings where fire protection is desirable or where insurance ratings are involved.

Operation

Underwriters' labeled rolling steel doors normally remain open. They are equipped with an automatic closing mechanism and release device which is actuated by fusible links in case of fire. These doors, however, can be operated in general service if desired, being fitted with handles on the bottom rail for manual operation, or equipped with a chain gear operator for mechanical operation.

In the event of fire, the automatic closing mechanism is released by means of fusible links and the door closes. A flame-stop baffle plate, also released automatically, closes the space between the hood and the roller shaft preventing the passage of flames through the hood.

In the case of mechanically operated Underwriters' labeled doors, the chain gear operator is automatically disengaged simultaneously with the release of the automatic closing mechanism.

Mahon Underwriters' Labeled Rolling Steel Doors can be quickly reset by one person and put in operation without delay after automatic closing.

Mahon No. 1 Interlocking Slats with Continuous Malleable Iron End Locks

Mahon No. 2 Interlocking Slats with Continuous Malleable Iron End Locks

As required by the Underwriters' Laboratories, Inc.

Mahon Rolling Steel Door, Type 600-CHL Underwriters' Labeled Class "A," "B," "C" and "D"
Mounted on the face of the wall

Mahon Rolling Steel Door, Type 300-ML Underwriters' Labeled Class "A," "B," "C" and "D"
Mounted in the opening between jambs

THE MOESCHL-EDWARDS CORRUGATING CO., INC.

Manufacturers of Steel Rolling Doors

CINCINNATI, OHIO

Products

"Mecco" Steel Rolling Doors.

Also manufacturers of "Mecco" Fireproof Hollow Metal Windows; "Mecco" Laundry Dryers.

For our page on Kalamein and Tin Clad Doors, see File Index.

TRADE-MARK

Facilities

"Mecco" doors are manufactured by an old established organization with ample facilities, both mechanical and financial, for filling any size contract.

They are designed by engineers old in the rolling steel door business and have been on the market for more than 15 years.

Service Type Doors

Service type rolling doors are designed for the closure of openings requiring protection against the elements or intrusion. They may be had in all types of operation, and, while they are not sold as fire doors, they act as a fire retardant inasmuch as all parts are of metal.

The following list gives the various means of mounting, operation and general information relative to the uses of doors of this type.

Type No.	Mounting	Operated by
2	Face of wall	Manual
4	Between jambs	Manual
6	Face of wall	Chain
*7	Face of wall	Chain
8	Between jambs	Chain
10	Face of wall	Crank
14	Face of wall	Chain
*15	Face of wall	Chain

*Mounted face of wall, operated from opposite side of wall.

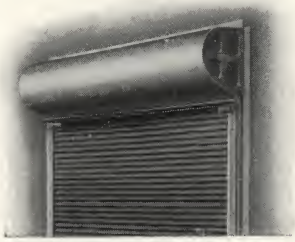
Underwriters' Labeled Doors

These doors are inspected and labeled by the Underwriters' Laboratories, Inc., and are designed primarily for fire protection. They are also an effective easy operating closure for the opening.

Type No.	Operation	Location	Operated by
Fire Wall Doors—Class A			
100	Automatic	Face of wall	Handles
102	Automatic	Face of wall	Crank
103	Automatic	Face of wall	Chain
104	Automatic	In opening*	Handles
106	Automatic	In opening*	Crank
107	Automatic	In opening*	Chain
Doors for Vertical Shaft, Corridor and Room Partitions—Class B-C			
200	Automatic	Face of wall	Handles
202	Non-automatic	Face of wall	Handles
204	Non-automatic	Face of wall	Chain
205	Automatic	Face of wall	Chain
206	Automatic	Face of wall	Crank
208	Non-automatic	Face of wall	Crank
210	Automatic	In opening*	Handles
212	Non-automatic	In opening*	Handles
214	Non-automatic	In opening*	Chain
215	Automatic	In opening*	Chain
216	Automatic	In opening*	Crank.
218	Non-automatic	In opening*	Crank
Doors and Shutters for Exterior Openings—Class D			
300	Automatic	Face of wall	Handles
302	Non-automatic	Face of wall	Handles
304	Non-automatic	Face of wall	Chain
305	Automatic	Face of wall	Chain
306	Automatic	Face of wall	Crank
308	Non-automatic	Face of wall	Crank
310	Automatic	In opening*	Handles
312	Non-automatic	In opening*	Handles
314	Non-automatic	In opening*	Chain
315	Automatic	In opening*	Chain
316	Automatic	In opening*	Crank
318	Non-automatic	In opening*	Crank

*"In opening" refers to doors coiling under the lintel.

SERVICE TYPE DOORS

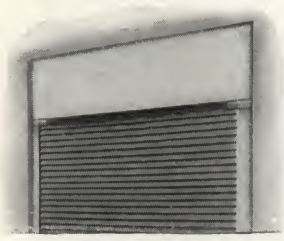


Type No. 2

Manually operated by handle on bottom bar. Adapted for openings not over 10x8 ft. Rapid in operation, working like a window shade. Door illustrated is mounted on face of wall

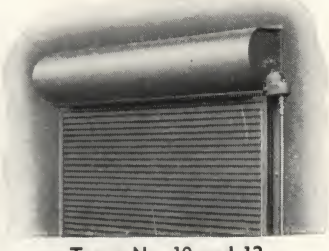
Types No. 6 and 14

Operated by chain and gear. Used where the height and area make a mechanically operated door desirable. All parts requiring lubrication are easily accessible



Type No. 4

Manually operated by handle on bottom bar. Mounted under lintel. Hood may be concealed by plaster or ornamental cover. Should not be used on openings over 10 ft. x 9 ft. 6 in.



Types No. 10 and 12

Crank and gear operated. Used on doors of any dimensions and may be supplied for operating on one or both sides of the wall—particularly adapted for the latter

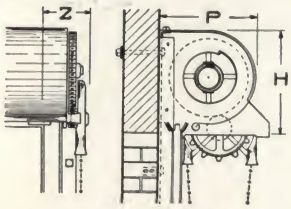
CLEARANCE SCHEDULE

SYMBOLS

H Hood height.
A Width of regular guide.
F Space for automatic device.
P Hood projection.
O Maximum swing of crank.
Z Space for crank or chain operator.

TYPE NO. 2

Opening width, ft.	A, in.	Opening height, ft.	H, in.	P, in.
4	5 1/8	6	12 1/2	11 3/4
6	5 1/8	7	12 1/2	11 3/4
8	5 1/8	8	13 1/2	12 3/4
10	5 3/8	9	14 1/2	13 3/4

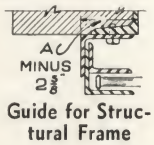


Chain Operated Door
Showing where hood sizes are taken

TYPE NO. 4

Opening height, ft.	H, in.	P, in.
8	13 1/2	13
9	14 1/2	13
10	14 1/2	13

Regular Guide for Masonry



Guide for Structural Frame

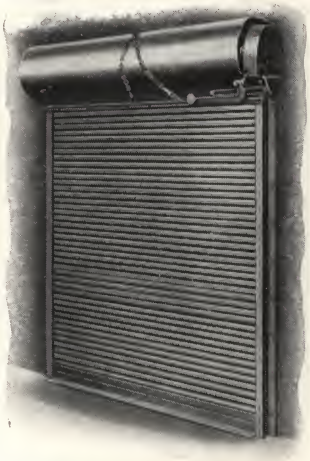
TYPES NO. 6 AND 14

Opening width, ft.	A, in.	Z, in.	Opening height, ft.	H, in.	P, in.
10	5 3/8	6 5/8	7	12 1/2	12
12	5 3/8	6 5/8	8	13 1/2	13
13	6 1/8	7 5/8	9	19	14
14	6 1/8	7 5/8	12	20	15
15	6 1/8	7 5/8	14	20	16

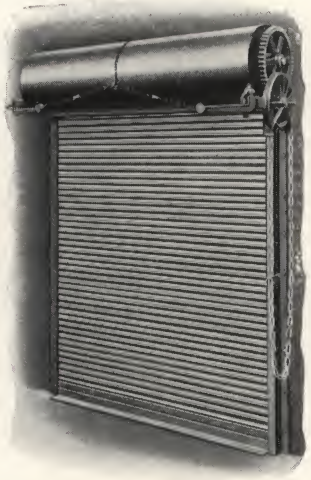
TYPE NO. 10

Opening width, ft.	A, in.	Z, in.	O, in.	Opening height, ft.	H, in.	P, in.
10	5 3/8	10 7/8	18 7/8	7	13 1/2	13
12	5 3/8	11 1/8	19 1/8	8	13 1/2	13
13	6 1/8	11 7/8	19 7/8	11	19	14
14	6 1/8	11 7/8	19 7/8	13	20	15
15	6 1/8	11 7/8	19 7/8	15	20	16

UNDERWRITERS' LABELED DOORS



Types No. 100, 200 and 300
Manually operated by handle on bottom bar. Mounted on face of wall. Types illustrated are automatic closing. May be operated from both sides of opening



Types No. 103, 205 and 305
Mechanically operated by chain and gear. Automatic closing. Mounted face of wall. Operation from chain side only

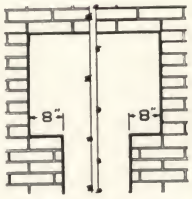
Types No. 104, 210 and 310
Manually operated by handle on bottom bar mounted under lintel with guides on face of wall. Types illustrated are automatic closing. Operated from both sides of opening

Types No. 102, 206 and 306
Mechanically operated by crank and gear. Mounted on face of wall. Types illustrated are automatic closing. May be operated from one or both sides of the opening

TYPES NO. 100, 200 AND 300

Opening width, ft.	A, in.	F, in.	Opening height, ft.	H, in.	P, in.
4	5 3/8	6 3/8	6	12 1/2	12
8	6 1/8	7 1/8	8	13 1/2	13
10	6 5/8	7 5/8	10	14 1/2	14
12	7 1/8	8 1/8	12	14 1/2	14

TYPES NO. 202 AND 302—NON-AUTOMATIC
Clearances required as above, except F
Clearances both sides shown under A



Backset at Head Doors 104, 210 and 310

TYPES NO. 104, 210 AND 310

Opening width, ft.	A, in.	Opening height, ft.	H, in.	P, in.
4	4	6	12	13
8	4 1/2	8	13	13
10	4 1/2	9	13	13
12	5	10	13	13

TYPES NO. 212 AND 312—NON-AUTOMATIC
All clearances required as above, except backset is 6 in. for all widths

TYPES NO. 103, 205 AND 305

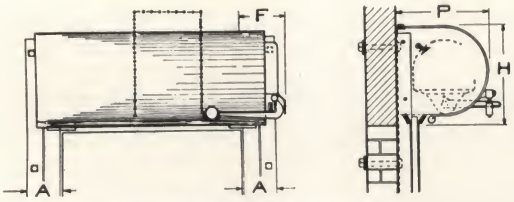
Opening width, ft.	A, in.	Z, in.	F, in.	Opening height, ft.	H, in.	P, in.
4	5 3/8	8 3/4	6 3/8	6	12 1/2	12
8	6 1/8	9 1/2	7 1/8	8	13 1/2	13
10	6 5/8	10	7 5/8	10	14 1/2	14
12	7 1/8	10 1/2	8 1/8	12	15 1/2	15

TYPES NO. 204 AND 304—NON-AUTOMATIC
All clearances required as above, except F
Clearance required plain end shown under A

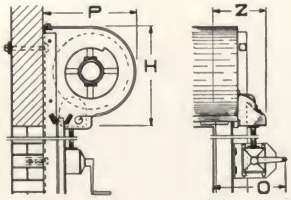
TYPES NO. 102, 206 AND 306

Opening width, ft.	A, in.	Z, in.	F, in.	O, in.	Opening height, ft.	H, in.	P, in.
4	5 3/8	11	6 3/8	19 1/8	6	12 1/2	12
8	6 1/8	11 3/4	7 1/8	19 7/8	8	13 1/2	13
10	6 5/8	12 1/4	7 5/8	20 3/8	10	14 1/2	14
12	7 1/8	12 3/4	8 1/8	21 7/8	12	15 1/2	15

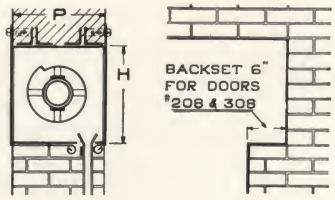
TYPES NO. 208 AND 308—NON-AUTOMATIC
All clearances required as above, except F
Clearance required plain end shown under A



Manually Operated Automatic



Crank Operated



Under Lintel Door

"Mecco" Rolling Steel Door Installation, Municipal Stadium, Cleveland, Ohio

THE ATCHISON REVOLVING DOOR CO.

MAIN OFFICE AND FACTORY
INDEPENDENCE, KAN.

LOCAL REPRESENTATIVE

AGENCIES IN 70 OF THE PRINCIPAL CITIES OF THE UNITED STATES AND CANADA
Consult City or Telephone Directory for Name of Nearest Representative or Write the Main Office

Products

REVOLVING DOORS, complete with wings, enclosures, cornices, pilasters, ornament (or without all trimming where these duplicate adjacent work). ADJOINING SWING OR SLIDING DOORS, TRIM, and ACCESSORIES.

In bronze, nickel silver, aluminum, Dow Metal, monel metal, steel, stainless steel, micarta, formica, and all cabinet woods.

Wings alone furnished only for marble enclosures.

Service

Revolving doors are a specialty that require long experience and training for their successful manufacture, installation and service. During 30 years of continuous progress Atchison has developed a thoroughly experienced and capable sales and service organization in more than 70 cities throughout the country.

Engineering service is available to architects and owners by Atchison engineers and representatives who have had long experience in analyzing entrance problems. Their analyses will show the savings and economies resulting from a revolving door installation and recommendations of design, layout, material and construction suitable to the entrance.

Field service by trained and experienced revolving door men is an essential part of a successful revolving door installation. Atchison doors are installed and serviced by a capable and experienced field organization.

Capacity and Size

Capacity—A revolving door will pass 3,000 to 6,000 persons per hour, each direction. At a normal rate of walking a revolving door makes 15 complete revolutions per minute, each revolution providing unobstructed passage for four persons both IN and OUT. The normal capacity of a revolving door is therefore 3,600 persons in and 3,600 persons out per hour.

Size—Four wing doors are made from 5 ft. 6 in. to 7 ft. 6 in. in diameter. It is recommended that they be not less than 6 ft. 6 in. which will pass traffic most efficiently. Hotels or post offices find the larger doors up to 7 ft. 6 in. more suitable for the handling of luggage and bundles. Elsewhere, doors should not be larger than 7 ft. reducing the temptation for two persons to crowd into one pocket. Inside height varies from 6 ft. 10 in. to 8 ft., the near-standard being 7 ft. It is recommended that the height not exceed 7 ft. 6 in.

Three wing doors are especially adapted to small entrances where traffic is limited as for inside air-lock passages, for toilet room entrances, for dark rooms, and for X-ray rooms.

General Data

Sliding Doors—Of straight or circular design for night closing are furnished with simple, trouble-free supported hardware.

Flexed Walls—Enclosure walls may be hinged to obtain maximum clear width when wings are folded or rolled aside for the passage of automobiles or other large displays.

Screen Doors—For summer use may be attached directly to enclosure wall-ends of Atchison full-folding doors. No vestibule extensions necessary.

Motor Drive—Friction clutch drive which allows stopping door or motor without damage and provides best known brake against over-speeding. Three speeds. Continuous operation, push-button or floor mat control.

Speed Control—See page 7.

Ceiling Lights—10 in. spun polished metal domes or hinged metal frames glazed with diffusing lenslite. Usually located in interior and exterior quarters midway between center and edge of ceiling.

Slot Closer—Is available for keeping ceiling slot of side-rolling doors closed at all times.

Burglar Locks—Of an automatic electric type provide instant locking of revolving doors. They may be controlled from any part of the building in any emergency.

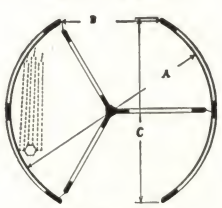
Divided Lights—Applicable to wings and walls.

Base-plates—Standard on metal doors. Recommended on wood doors to prevent floor-scrubbing damage to walls or finish.

Access to Mechanism—Space over door should be accessible for oiling and adjusting main bearing. Ceiling access panels can be had but are undesirable.

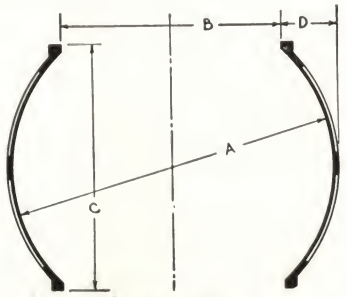
Patents—Cover exclusive features and while not relied on in pricing, infringements will be vigorously resisted.

DIMENSION DIAGRAMS AND TABLES



3-Wing Door

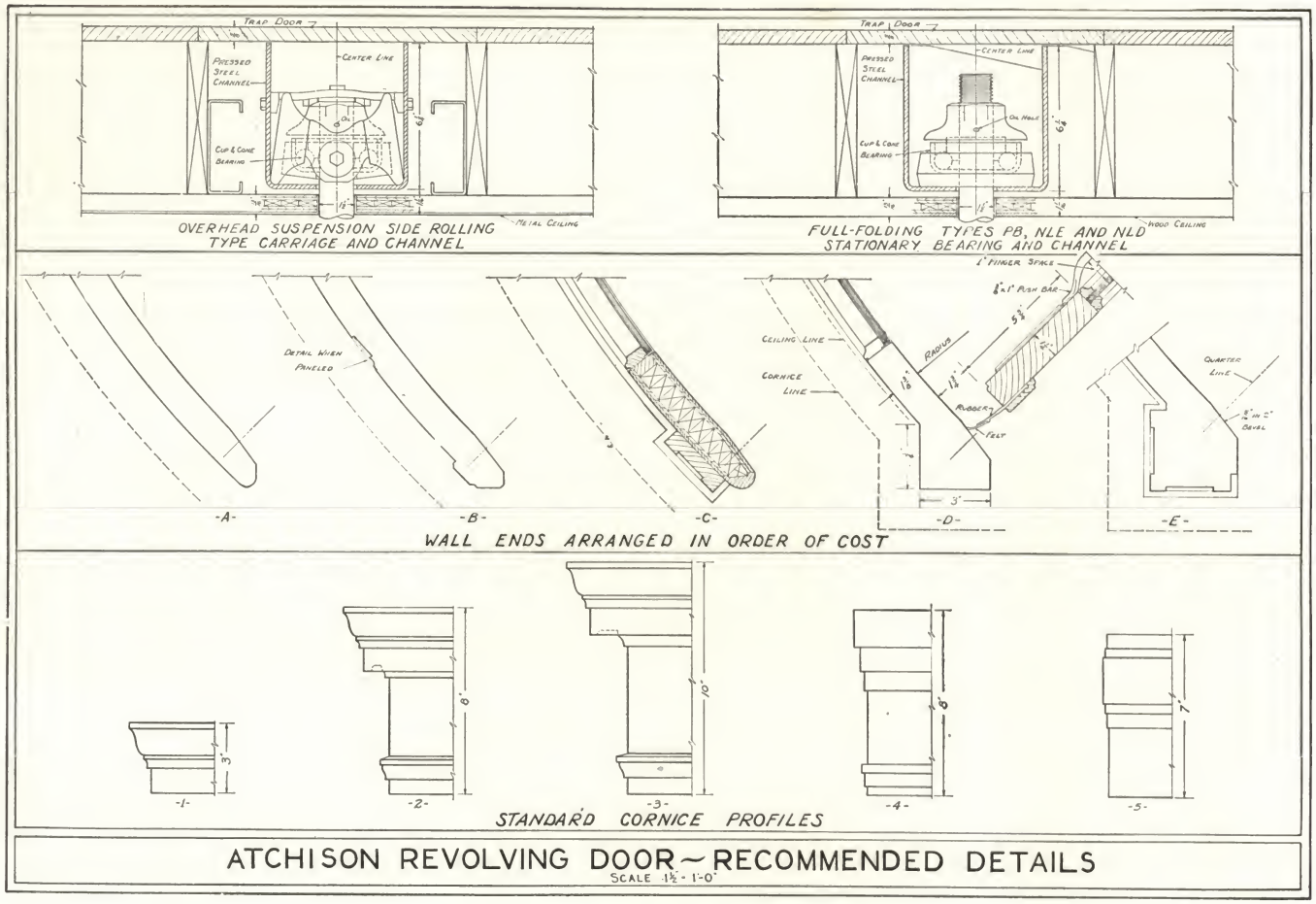
A	B	C
4 ft. 6 in.	2 ft. 2½ in.	4 ft. 2 in.
5 ft.	2 ft. 5½ in.	4 ft. 7 in.
5 ft. 6 in.	2 ft. 8½ in.	4 ft. 2 in.



4-Wing Door

A	B	C	D
5 ft. 6 in.	3 ft. 9 in.	4 ft. 2½ in.	0 ft. 11⅞ in.
6 ft.	4 ft. 2 in.	4 ft. 7 in.	1 ft. ⅜ in.
6 ft. 6 in.	4 ft. 6 in.	4 ft. 11½ in.	1 ft. 1⅜ in.
7 ft.	4 ft. 10 in.	5 ft. 4 in.	1 ft. 1 in.
7 ft. 6 in.	5 ft. 2 in.	5 ft. 8½ in.	1 ft. 2 in.
8 ft.	5 ft. 6 in.	6 ft. 1 in.	1 ft. 3 in.

Schedule of ATCHISON Revolving Door advantages as found in these classes of Buildings and Stores → *Note the practically universal values, as well as the frequency of special values as shown by double **.*		BANKS	OFFICE BUILDINGS	HOTELS	RESTAURANTS	DEPARTMENT STORES	SHOPS	POST OFFICES and PUBLIC BUILDINGS
By keeping winter drafts and cold and summer heat and dirt away from Customers, Visitors, Tenants, Employees and Officers.	COMFORT	*	*	*	**	**	*	*
	HEALTH & EFFICIENCY	**	*	*	**	**	*	*
By lower first cost due to less radiation, less floor space for entrances, and elimination of wasteful vestibules.	BUILDING COST SAVING	*	**	**	*	*⁘	*	*
By using less floor space than swing doors and vestibules.	FLOOR SPACE SAVING	*	*	*	*	*	*	⁘
By saving in first costs of heating plant. By saving in fuel consumption.	FUEL SAVING	*	⁘⁘	⁘⁘	*	**	*	*⁘
By saving in first cost of air-condition plants.	POWER SAVING	*	*	**	**	**	*	*
By saving in air-cooling power costs. By saving in dust and dirt damage.	DUST SAVING			*	*	**	**	
By using ball and roller bearings to stop wear. By eliminating wear and adjusting of spring checks and floor hinges.	MAINTENANCE SAVING	*	**	**	*	**	*	⁘
By reducing cleaning and dusting of stock, fixtures, decorations and furniture.	LABOR SAVING			*	*	**	*	
By preventing entrance accidents. By eliminating confusion and interference between in-and-out traffic.	SAFETY	*	*	*	*	**	*	**
By effortless "opening" and passage, due to perfect wind balance against wind or suction. By greater ease in carrying through parcels or luggage.	CONVENIENCE	*	*	**	*	**	**	**
By stopping direct drafts which carry in dust and dirt, and cause damage to goods, decorations and equipment.	CLEANLINESS	*	*	**	**	**	**	⁘
By shutting out street noise, and doing away with flapping or slamming doors.	QUIETNESS	*		*	**	*	*	
By greater usable area adjacent entrances, through eliminating drafts, winter cold and summer heat.	INCREASED SALES				**	**	**	
	INCREASED RENTABLE AREA		**	*				*
By handling more traffic through ease of passage and operation, and orderly division of in-and-out movement.	INCREASED CAPACITY	*	*	*	*	*		*



ATCHISON REVOLVING DOOR ~ RECOMMENDED DETAILS

SCALE 1½" - 1'-0"

CONSTRUCTION

Wood—Wings and enclosures of all cabinet woods veneered with 5-ply laminated waterproof construction, making one-piece or slab wall sections or wings with correspondingly greater strength.

Metal Covering—Wings and enclosures—bronze, nickel silver, aluminum, Dow Metal, monel metal, steel, or stainless steel in .050 in. (16 B&S gauge) plate overlay applied with special metal holding adhesives, under power pressure, to hardwood faced laminated waterproof cores. One piece metal sheets, or joints of hair-line construction reinforced with riveted, sweated strips. This construction is recommended in preference to hollow metal for all except welded tubular aluminum wings, because of (1) greater stiffness to resist unusual twisting strains in wings, (2) less weight for necessary stiffness, reducing undesirable momentum and inertia effects, (3) lower cost, and (4) greater fire resistance.

Hollow Metal—Wings of hollow reinforced welded tubular construction fabricated from 1¼x5 in. rectangular seamless tubes. Enclosures in 10 to 14 B&S gauge on welded steel frames.

Hollow Welded Tubular Aluminum Wings—Developed in collaboration with Aluminum Co. of America, are one-third to one-half the weight of any other wings, very strong and stiff, easy to revolve, and quick to stop.

Micarta, Formica and other composition materials may be used in place of wood or metal veneers in any color or design treatment or in combination with metal inlays. Applied under pressure with special adhesives to hardwood faced, laminated, waterproof cores.

Marble Enclosures—Atchison full-folding types NLE, NLD, and PB wings are ideal for use with marble enclosures, as no ceiling slot is needed, only a 1¾ in. center hole, and ceiling slabs can be supported from the bearing channel which lies directly above them with ends resting over marble walls. Always provide relief bevel at ends of walls. (See wall-end E, above.)

Finish—*Wood*—Painter's finish regularly supplied in two grades, 3-coat gloss, or 4-coat rubbed varnish, or enamel in black or colors to approved samples.

Metal—To match adjacent work. Fine-lined natural or medium oxidized recommended, not lacquered. Samples on request.

Alumilite—The highly desirable, durable, and attractive electrolitic finish for aluminum is now available on revolving doors as a result of special construction technique developed by Atchison.

Hardware—Of heavy, plain beveled design, solid cast bronze, nickel silver, aluminum, or chromium plate. No other plating recommended.

Cylinder locks, standard or master-keyed, operant from inside or outside, are standard equipment on all full-folding types, optional with side-rolling types.

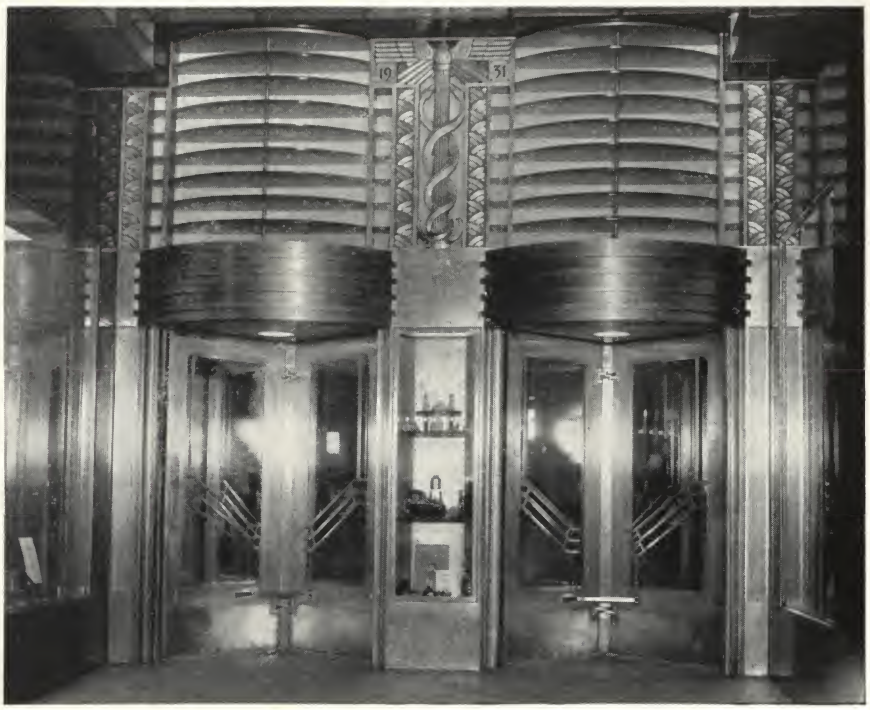
Air-lock Strips—Consist of wide bottom rubber for flexibility, thick woven felt top strips, and tapered molded side rubbers of anti-aging composition with piano-felt edges, all especially designed and selected for maintaining the air-lock with proper amount of friction.

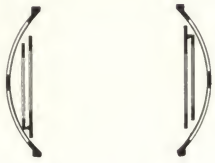
Glass—Furnished in polished or drawn plate. Bottom rail height 24 in. from floor recommended to resist unusual twisting strains. 18 in. minimum in wings with braces—no minimum limit on braceless wings.

FULL-FOLDING WINGS

Full-folding type wings are an exclusive Atchison development and provide distinct advantages not available in any other type of revolving door.

"Full-folding" describes the particular advantage of this type of revolving door. When not in revolving position, full-folding wings fold one pair to *each* side of the enclosure *entirely* within the chord line across the enclosure wall-ends. This gives the *entire width* of the opening as a clear and unobstructed passage-way for summer traffic, ventilation, passing furniture and equipment, and permits hanging summer screen doors directly to wall-ends without requiring extension jambs. Figures A and B illustrate this important advantage and may be compared with Figure 1, page 6, showing folded position of side-rolling wings.





Hutzler Brothers Department Store, Baltimore, Md.

Office of Jos. Evans Sperry, Architects

Type NLE Full-Folding, Panic-Proof Doors

Full-folding and panic-proof wings are hung with the *link hinge* to a square split center-post which parts for folding a pair of wings to *each* side of the enclosure on a powerful pivot mechanism of the Cremorne type. These pivot mechanisms operate by cylinder-controlled tumblers in outer stile of the two main wings and so serve also as the locks, fastening at four points, top and bottom and both sides of enclosure, secure from racking or twisting. Cylinders operate from inside and outside. Revolving, the wings hang from a central hanger stem suspended from the overhead cup-and-cone ball bearing. Since the overhead mechanism is stationary, no ceiling slot is required in full-folding doors.

Type NLE full-folding wings are panic-proof with cast bar braces to hold them in normal revolving position, one end universally hinged, the other releasable with an adjustable non-corroding ball-and-socket catch. The braces push or pull out under excessive pressure and allow wings to swing outwardly into one pack giving free and unobstructed passage on each side.

Type NLD full-folding, panic-proof wings have the important advantage of not collapsing under excessive wing pressure along such as is sometimes caused by high winds, suction pressure of tall buildings, or crowded sales rushes. Type NLD has monel cable braces automatically releasable only by pressure against the inner ends of the pushbars where pressure develops in a panic rush, similar in principle to familiar exit-bar locks. Braces are manually releasable for folding of wings.

Type PB wings, full-folding but not panic-proof, are rigidly held in revolving position by cast bar braces manually releasable for folding. Type PB wings are recommended for their simplicity and economy in entrances where adjacent swing doors or other considerations make the panic-proof feature unnecessary.

CURVED WINGS

Curved Wings make the best *revolving* door. They are an exclusive Atchison development. They are the *only* improvement ever made affecting the *primary* use of revolving doors—the revolving use wherein an entrance is always closed yet constantly open to traffic.

The shape of the wings does not, of course, increase the area within the circle, but it does divide this area into spaces so shaped that passage through a Curved Wing door is more than a fourth easier than passage through a straight wing door.

The user pushing naturally against the outer stile of the wing brings his leading foot near the center of the wing. He finds the center of the Curved Wing six inches farther ahead of him. This gives that much more stepping space *in front,* where needed, and permits a natural, easy, upright full-step walk.

Curved Wings, following the contour of the enclosure walls (figure B), have a more natural and handsome appearance when folded; are a natural traffic regulator eliminating any temptation for travel in the wrong direction; afford a safety factor because bent glass is less liable to breakage owing to the arched shape.

Curved Wing Doors coupled with the simplicity of braceless mechanism as illustrated on page 6, reach the maximum of beauty and efficiency in revolving doors.

BRACELESS TYPE NTS WINGS PANIC-PROOF AND SIDE-ROLLING

Atchison Type NTS Braceless Wings are the result of over 30 years' experience by a progressive revolving door manufacturer incorporated into a single type—the simplest, neatest, and most perfectly and easily operating design ever developed.

Mechanism

Type NTS Braceless Wings are automatic, collapsible, panic-proof, having each of the four wings carried upon the center post disks, independently of the other three, by cored one-piece box hinges or hangers. The wings are held in radial revolving position (position 1) by spring-tensioned ball and socket catches, all stainless steel to eliminate corrosion. Hinges giving support at both top and bottom overcome torsion forces and eliminate twisting and racking.

The metal center post, to which the disks are secured, is suspended from a cup-and-cone ball bearing carried by a compact roller bearing overhead carriage assuring easy rolling aside in the "Atchison" truss-shaped channel.

The center pivot pin is stationary in a floor socket having a removable center piece for easy cleaning. The pivot is surrounded by long roller bearings eliminating the possibility of wear and looseness at this important point.

Wings lock with ceiling keylocks of the mortise bolt type, tumbler operated, using standard or master-keyed lock cylinders, and operate from exterior or interior.

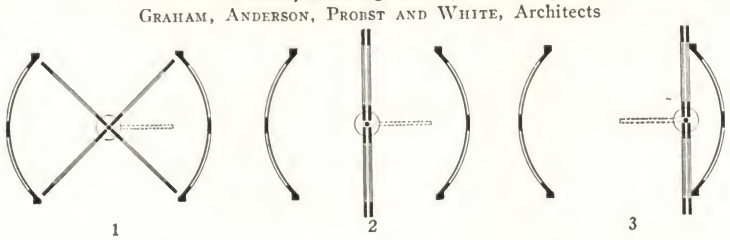
Major Improvements

Releasing—Top and bottom hinges are simultaneously tensioned or released for folding purposes. They are connected by rods operating in preformed grooves in the inner stiles, with special powerful flush levers located breast high on facing sides of each pair of adjacent wings. Moving each flush lever tensions or releases both top and bottom ball catches. Rolling the wings aside only requires the throwing of two wing levers in one pocket and two wing levers and one center post lever in the opposite pocket, the latter simultaneously lifting the center pivot and releasing the overhead carriage latch.

This arrangement of tension operation levers is easily the outstanding development in ease of handling revolving door wings. Heretofore on all braceless type wings each hinge has had its individual tensioning lever making it necessary, when folding the wings, to kneel and reach down to operate the bottom tension levers and stretch or climb on a box or stepladder to reach the top tension levers, going into each of the four wing pockets successively to perform the eight operations.

Adjustment—The amount of holding power or collapsing pressure can be readily adjusted with an ordinary screwdriver from the inner edge of the hinges when the wing is turned about 45 degrees from radial position, without dismantling any part of the hinges.

Conway Building, Chicago, Ill.
GRAHAM, ANDERSON, PROBST AND WHITE, Architects



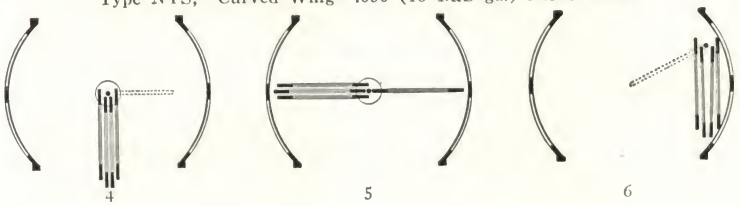
The access hole for adjustment is completely closed by the center post, leaving no slots or openings in the sides of the hinges to admit dirt or dampness.

Automatic Pressure Variation—The special patented toggle device for tensioning the ball catches so that they have their maximum pressure and holding power when the balls are seated on the radial position sockets and least pressure when dislodged and riding on the face of the disk.

The leverage gained by the use of the toggle device allows the ball to seat less deeply into the holding socket and still have surplus holding power. This gives a safety factor as all possibility of the ball "freezing" in the socket is eliminated.

With the pressure of the ball against the face of the disk, there is no pressure against the pivoting

Broadway-Continental Building, 1450 Broadway, New York, N. Y.
Type NTS, "Curved Wing" .050 (16 B&S ga.) Nickel Silver



mechanism to cause wear and looseness, such as develops when pressure is against the edge of the disk. It also permits the free swinging of wings back to radial position.

Other Advantages

The center post is round with the inner edge of the wings shaped to fit it. This makes the center of the door absolutely weatherproof with a metal to metal contact and retains the smooth, easily cleaned contour with its attractive appearance.

Close fitting of fulcrum points and surplus power in the spring-tensioned releasable catches prevent development of undesirable looseness.

Disks are located away from ceiling and floor, making easier the rolling of wings aside, the entering of the center pivot into floor sockets, and the replacement of air-lock strips.

This simplicity and durability makes safe and easy operation even by inexperienced help. The absence of braces provides more room between the wings for easier passage, improves appearance, and affords designing freedom without reference to braces.

Folding

An important feature is that the ball catches which hold the wings in radial position also hold them in all folded positions, requiring no folding bar or additional mechanism for that purpose, Separate sockets are so located on the disks that they automatically engage the balls when the wings reach their proper folded positions.

An exclusive feature is that the wings may be easily returned from folded to revolving position without operating the tension levers. A pull of sufficient force to disengage the ball from the folded position socket is all that is necessary to return the wings to normal rotating position where the radial position sockets automatically engage the balls, tensioning the wings in the proper radial position.

Position 2, center folded—For ventilation or free passage. Door can be folded to this position in 15 seconds and returned to revolving position in 6 seconds.

Position 3, wings folded and rolled aside—giving large free opening for passing bulky objects or free traffic or ventilation. Door can be folded and rolled aside in 30 seconds and returned with equal speed.

Position 4, panic position—Pressure against the wings in excess of the pressure needed to rotate the door automatically releases the ball and socket catches, allowing the wings to swing freely and fold outwardly in one equally spaced pack giving free and unobstructed passage.

Position 5, locked position—The wearing surfaces of disks and hinges are so ample that in locked position a single wing may be used, without danger of wear, as a swing door, for exist purposes after-hours.

Position 6—Wings folded and rolled aside with diagonal ceiling slot. Of especial value to allow use of curved sliding doors or attaching of screen doors direct to enclosure wall-ends.

Type NTS wings fold into the smallest pack possible, occupying only 3¼ in. in positions 2 and 3 and 8 in. in position 4.

Type NTJ

Type NTJ braceless wing mechanism is similar to Type NTS in general operation and design. The ball catches are tensioned separately by levers on top and bottom hangers, tension levers being on the back of all wings.

Patents

Patents and patent applications cover these valuable features of NTS and NTJ braceless wings.

Both Types NTS and NTJ meet the requirements of the U. S. Government Standard Specifications.

STOCK DOORS

The Number Seven

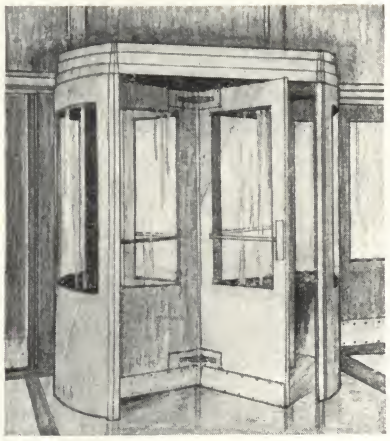
No. 7—7 ft. by 7 ft.
Design G—Glass in walls.
Design 1—Solid flush walls.
Cornice—8 in. molded.
Material—Birch or Plain Oak.
Finish—4-coat rubbed varnish to sample.
Mechanism—Type NTJ braceless, side-rolling or Type NLE full-folding.
Hardware—Bronze.
Kickplates—8 in. two sides.
Pushbars—Two per wing.
Glass—¼-in. polished plate.
Bottom Rail Height—Variable.

* * * * * *

Note: Height of all doors may be reduced to 6 ft. 10 in. Hardware may be chromium plated. "Curved Wings" are not available in stock doors.

The Recovery

Recovery No. 66—6 ft. 6 in. by 7 ft.
Recovery No. 60—6 ft. by 7 ft.
Recovery No. 56—5 ft. 6 in. by 7 ft.
Design G—Glass in walls.
Design 1—Solid flush walls.
Design U—Unfinished convex.
Cornice—8-in. plain band.
Material—Gumwood.
Finish—3-coat gloss varnish or enamel—black or colors.
Mechanism—Type NTJ braceless, panic-proof, side-rolling.
Hardware—Bronze.
Kickplates—6 in. two sides.
Pushbars—One per wing.
Glass—$\frac{7}{32}$-in. drawn plate.
Bottom Rail Height—27 in. from floor.



The Moderne

Moderne No. 66—6 ft. 6 in. by 7 ft.
Moderne No. 60—6 ft. by 7 ft.
Moderne No. 56—5 ft. 6 in. by 7 ft.
Design G—Glass in walls.
Design 1—Solid flush walls.
Cornice—8-in. modernistic.
Material—Birch.
Finish—3-coat gloss varnish or enamel—black or colors.
Mechanism—Type NTJ braceless, panic-proof, side-rolling.
Hardware—Bronze.
Kickplates—6 in. two sides.
Pushbars—One per wing.
Glass—$\frac{7}{32}$-in. drawn plate.
Bottom Rail Height—27 in. from floor.

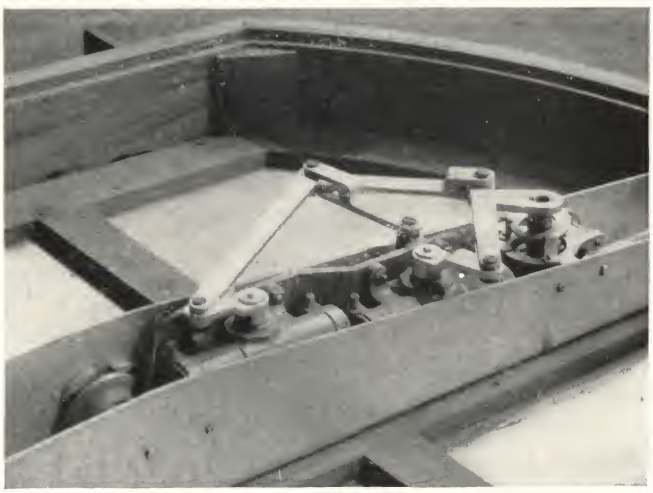
ATCHISON GEARLESS LIQUID-CHECK SPEED CONTROL

is a simple, effective, dependable hydraulic device to prevent excessive speed or spinning of revolving door wings and may be easily and economically applied to any old or new Atchison door.

It is free from wear of brake bands or gears, and consists of two large, specially-designed liquid-checks, connected by arms with oilless bushings to a crank on the revolving center post. The checks are double-acting, giving resistance in both directions of the piston travel, so that braking action is set up around the entire swing of the wings. The checks are practically without wear, and use a liquid which is non-freezing and non-evaporating.

Adjustment is provided for adapting to traffic needs.

This device meets the requirements of the U. S. Government standard specifications. Like other principal Atchison developments, it is covered by patent.

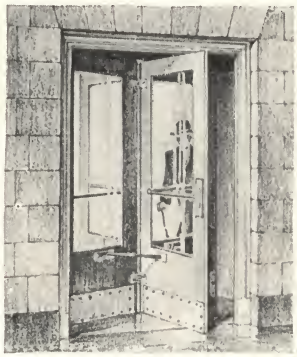


STANDARD DESIGNS

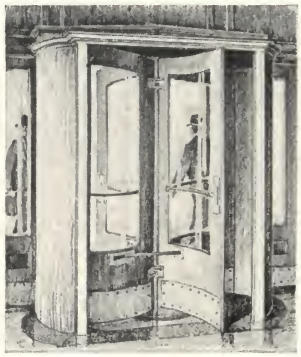
These are shown on opposite page so arranged, numbered and lettered to show in schedule form the combination of various standard cornice and enclosure wall designs.

The standard design schedule is presented as a standard reference for basic designs. It is intended as a convenient base upon which the Architect may develop his individual designs of cornices, pilasters or wall-ends, and enclosure wall panels and glass openings in harmony with modern architectural treatment.

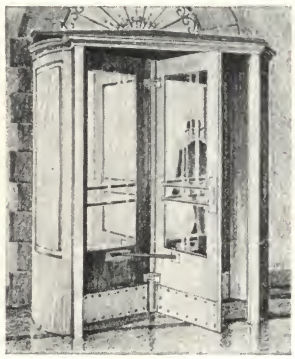
Photographs in these pages illustrate actual installations of such designs. Thus, Conway Building—Graham, Anderson, Probst & White, Architects—(page 5) illustrates modern architectural modification of standard Design 3. Similar modifications of Designs 1U and 2G are illustrated on pages 4 and 6 respectively.



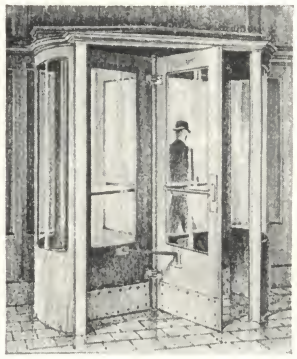
Design 1U
Walls—Unfinished Convex.
No Cornice or Roof



Design 1
Walls—Smooth Convex

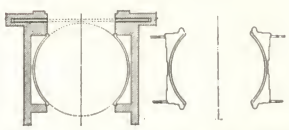


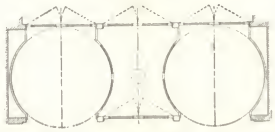
Design 1P
Walls—Paneled Convex

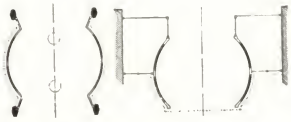


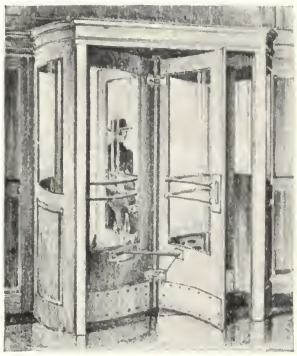
Design 1G
Walls—Bent Plate Glass

These designs include 3-in. plain cornice, roof, mechanism cover and trap door

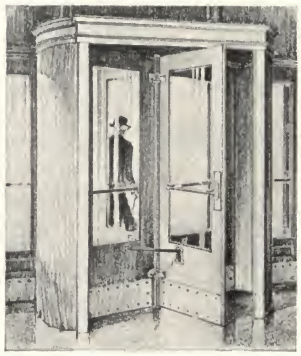




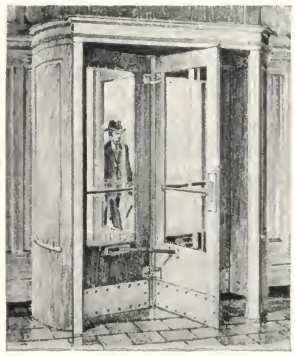




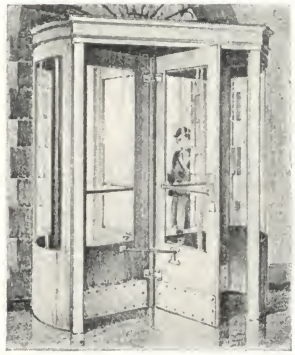
Design 2GP
Walls—Glass with Panel Below



Design 2
Walls—Smooth Convex

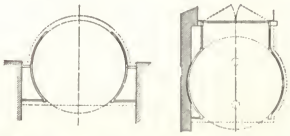


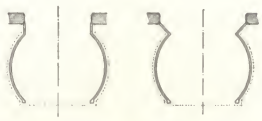
Design 2P
Walls—Paneled Convex

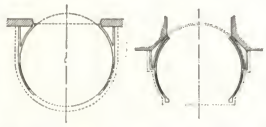


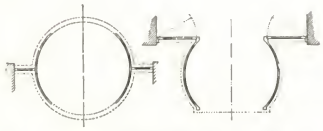
Design 2G
Walls—Bent Plate Glass

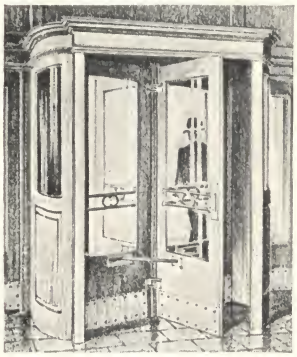
These designs include 6 to 8-in. plain moulded cornice, roof and trap door



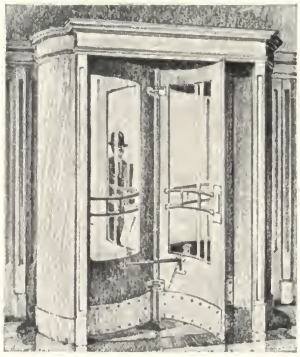




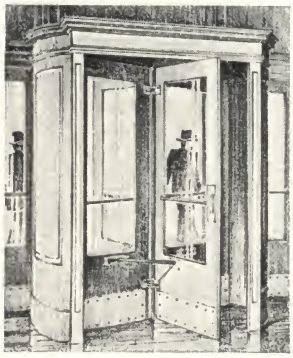




Design 3GP
Walls—Glass with Panel Below



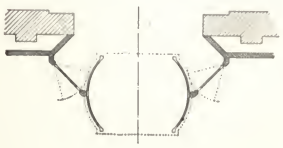
Design 3
Walls—Smooth Convex

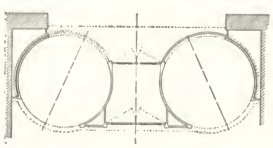


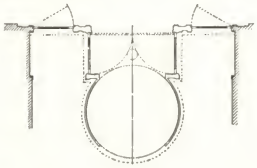
Design 3P
Walls—Paneled Convex

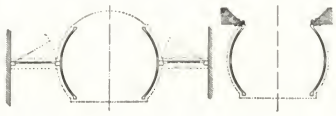
Design 3G
Walls—Bent Plate Glass

These designs include 10 to 12-in. ornamental cornice, roof and trap door









STANDARD DESIGN SCHEDULE

With Suggestive Layouts Applicable to Various Designs

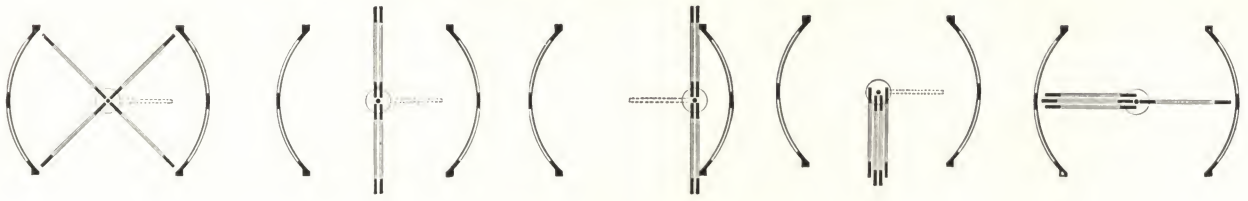
CLASSES AND TYPES OF DOOR WINGS

Atchison door wings are made in two general classes: "Side-rolling" in which wings fold into one plane and roll aside on an overhead carriage, and "Full-folding" in which they fold a pair to each side.

In each class, the wings may be safety exit or panic-proof type, folding in one pack outwardly under panic conditions or they may be standard collapsing or non-panic proof.

The wings of either class or type may be straight or "Curved."

Side-Rolling Types NTS and NTJ Braceless Wings



1 2 3 4 5

Types NTS and NTJ braceless wings are side-rolling and panic-proof, taking positions as shown above. With a diagonal ceiling slot they can also place to one side as in Drawing 26 opposite. See pages 5 and 6 for complete description and illustration of mechanism.

Side-Rolling Type NLK Wings

6 7 8 9 10

Type NLK wings are side-rolling and panic-proof, taking positions shown above. With a special diagonal ceiling slot they can also place to one side (Drawing 26 opposite) requiring a side floor socket to hold the center pivot. The wings are hung with a universal springless link hinge to a metal center tube, suspended from a cup-and-cone ball bearing carried by a compact roller bearing overhead carriage, running in the regular "Atchison" truss-shaped steel channel (see detail, our page 10). They roll aside for free opening, but require a ceiling slot and take up 6 to 8 in. of the width and project beyond the wall ends when folded.

NLK wings are locked by ordinary flush bolts to the ceiling only and from inside only, or by mortise bolts to ceiling only with lock cylinders operant from inside or outside.

NLK wings have large cored section cast bar braces to hold them in normal radial position (Drawing 6), one end universally hinged, the other releasable with an adjustible non-corroding ball-and-socket catch. The braces push or pull out under excessive pressure and allow wings to swing outwardly into one pack (Drawing 10) and give exit on both sides without revolving.

Side-Rolling Type PBK Wings

11 12 13 14 15

Type PBK wings are side-rolling but not panic-proof, and take the positions shown above, using for braces the same "latch" drop arm described for Type PB on opposite page.

PBK wings lock in the same way as Type NLK, with plain flush bolts, or with lock-cylinder mortise bolts, to ceiling only.

Type C

These 4-wing doors have wings that take positions shown in Drawings 11 and 13 only, do not roll or fold aside in any way, and lock by flush ceiling bolts from inside only. They are lowest in cost and have the same revolving value as the much more expensive folding and panic-proof types.

Full-Folding Types NLE and NLD Wings

16 17 18 19 20

These types take the positions shown above and are safety-exit or panic-proof and also full-folding in either straight or "Curved Wing." The wings are hung with the "link hinge" to a square split centerpost which parts for folding a pair of wings to each side (Drawing 19), on powerful pivot mechanisms of the Cremorne type. Revolving, the wings hang from a central headed stem and an overhead cup-and-cone ball bearing, all stationary and requiring no ceiling slot. Locking is inherent, by regular cylinders applied to control the pivot operators, and wings fasten at four points, top and bottom and both sides of opening (Drawing 17), secure from racking or twisting as when locked at ceiling only, and operate from inside and outside.

Type NLE wings are spread with the same cast cored bar as described for Type NLK, universally hinged at one end and releasably held at the other to push or pull out successively under excessive pressure.

Type NLD has cable braces of heavy monel tiller rope, automatically releasable by pressure against the inner ends of the push-bars, where pressure develops in a panic rush, same as Von Duprin or Russwin exit bar-locks. But NLD cable braces will not let go under excessive wing pressure alone, as in high winds or crowded sale rushes. They can be released for ordinary handling by a thumb piece at the latch. Due to their positive holding power, there is included in one brace of each door a toggle action tightener. Closed, it pulls all braces up snapping tight. Open, it gives ample slack for easy connecting. Braces are adjustable for length.

The particular advantage available only with full folding wings is that the wings fold one pair to each side of the enclosure entirely back of the chord line formed by the wall-ends thus giving the entire width of the opening free and unobstructed for ventilation, traffic, passing bulky objects, or hanging summer screen doors directly to the wall-ends without requiring extension jambs.

Full-Folding Type PB Wings

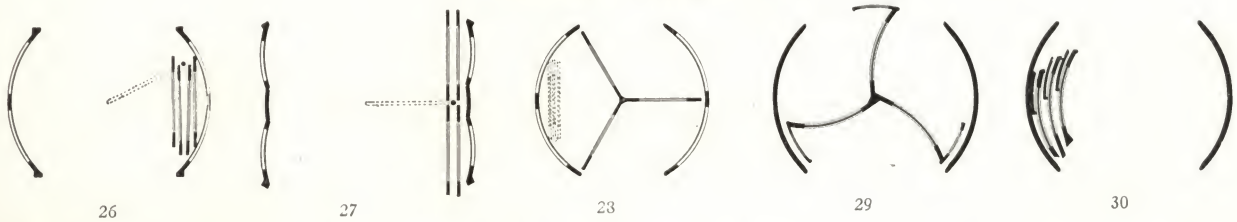
21 22 23 24 25

Type PB wings are full-folding, but not safety-exit or panic-proof, taking the positions shown above. Drawing 21 shows "Curved Wings" in a ceiling-lock position and Drawing 22 in the regular folding and full locked position, from which it can be unlocked at sides to revolve, or released from interior only at the center, to fold a pair to each side (Drawing 24). All 4-wing doors can also have wings placed in lengthwise position (Drawings 3, 8, 13, 18, and 23). Both straight and "Curved Wings" fold aside with the same economy of space (Drawings 24 and 25), but the "Curved Wings" look more natural and sightly.

Note: *See information relative to Drawing 28 below.*

Type PB wings are spread by cast bar braces, hinged to one wing to rise up and engage the other wing with a wedging action which avoids looseness or chatter.

Special Features



26 27 28 29 30

Drawing 26 shows side-rolling type NTS, NTJ or NLK wings folded into one pack and placed aside, using a side floor socket.

Flexed enclosure walls can also be furnished with side-rolling wings to give maximum free opening if desired (see Drawing 27).

Type PB 3-wing doors have wings to fold aside as shown by dot-line in Drawing 28, and lock to floor and ceiling at one wing only, with flush bolt on other wing. 3-wing doors are useful for narrow entrances with limited traffic, for inside air-lock passages, toilet rooms and for dark rooms. For the latter purpose they are usually made with solid flush wings and double air-lock strips. They are also used for X-ray rooms with lead sheet built into the wings.

Type HC Wings

Type HC 3-wing doors (Drawing 29) are a new development for narrow entrances, using four wing enclosures for letting traffic pass in both directions at once, and 3 wings with hinged shoes carrying two airlock strips for maintaining the air lock. These doors can be made in 4½ to 5½-ft. diameters. The 5-ft. size has the easy passage of a 6½-ft. 4-wing door, due to the distance between wings. They will handle traffic at three-quarters the rate of a 4-wing door, in both directions at the same time. Wings may be straight or "curved."

The wings fold into one pack and swing aside as shown in Drawing 30. Braces are a plain hook bar, locking by the folding pivots to floor and ceiling on one wing, and flush bolt on another.

MASTER SPECIFICATION FOR ATCHISON REVOLVING DOORS

(Notes in italics are explanatory or advisory only and should not be included in the specification. Whenever words or phrases occur in the body of the specification in italics and parentheses, choose that word which applies to the particular door. Wherever the word "specify" occurs in italics and parentheses, add the particular word or clause applicable, optional with the writer.)

(1) Revolving Doors

Revolving door contractor shall furnish and install where specified and shown on plans ATCHISON REVOLVING DOORS, type *(NTS or NTJ, braceless, panic-proof, side-rolling) (NLE, panic-proof, full-folding) (NLD, panic-pushbar release, full-folding) (PB, non-panic-proof, full-folding)* and design *(specify)* built of *(specify) (equipped with speed control).*

***(Note:** For design see Standard Design Schedule, page 8.)*

(2) Scope

Revolving door contractor shall include circular enclosure, flat ceiling *(cornice) (pilasters) (sliding doors) (adjoining trim),* revolving wings, hardware, glass, and complete mechanism *(including speed control).*

(3) Mechanism

(3a) Panic-Proof Device—

(3a1) The mechanism of the revolving door shall be so constructed that the four wings will fold from their revolving position to a wide open panic position instantly when a force somewhat greater than that necessary to revolve the wings is applied on any two wings.

(3a2) The mechanism of the revolving door shall be so constructed that the four wings will fold from their revolving position to a wide open panic position only when pressure is applied against the inner ends of the pushbars on any one wing which will automatically release the cable braces.

(3a3) The tension holding the wings in their radial position shall be adjustable to a collapsing pressure of from 60 to 175 pounds quickly without disassembling any of the mechanism.

***Note:** Use paragraph 3a1 and 3a3 for types, NTS, NTJ and NLE; paragraph 3a2 for type NLD. Omit section 3a on type PB.*

(3b) Radial Position Mechanism—

(3b1) Each of the four wings shall be carried independently of each other by cored one-piece hangers pivoted to the center disks at both top and bottom of each wing. Each wing shall be held in radial revolving position by spring tensioned ball and socket catches of stainless steel contained in the disks and hangers. No brace arms, chains or cables will be permitted between the wings. Tensioning mechanism shall be so constructed that ball catches have maximum holding power when balls are seated in sockets and minimum pressure when dislodged and riding on face of disks. Top and bottom tensioning mechanisms shall be simultaneously tensioned or released for folding purposes by manually operated flush levers located at breast height on facing sides of each pair of adjacent wings.

***Note:** In type NTJ substitute for last sentence "Top and bottom tensioning mechanism shall be tensioned or released for folding purposes by manually operated levers located on each hanger."*

(3b2) Wings shall be hung with a universal springless link hinge to a square split center post to part for folding purposes. Wings shall be held in radial position by cast bar braces with one end universally hinged, the other automatically and manually releasable with an adjustable stainless steel ball-and-socket catch.

(3b3) Wings shall be hung with a universal springless link hinge to a square split center post to part for folding purposes. Wings shall be held in radial position by monel rope cable braces automatically releasable by pressure against inner ends of pushbars. Braces shall be adjustable and manually releasable for folding purposes.

(3b4) Wings shall have integral center structure and be held in radial position by cast bar braces, hinged to one wing to rise up and engage the other wing with a wedging action.

***Note:** Use paragraph 3b1 for types NTS and NTJ; paragraph 3b2 for type NLE; paragraph 3b3 for type NLD; paragraph 3b4 for type PB.*

(3c) Folding—

(3c1) Mechanism shall permit the wings to be folded manually in a central position in pairs; rolled to one side of enclosure in pairs; in a central panic position with four wings folded like a book. Sockets shall be so located on disks to engage tension balls in folded position and hold wings without separate folding bar. Wings shall be manually returned to radial position without releasing of tension.

(3c2) Mechanism shall permit wings to divide at center and fold one pair to each side of enclosure entirely back of enclosure wall chord line. Wings shall also fold in center positions.

***Note:** Use paragraph 3c1 for types NTS and NTJ; paragraph 3c2 for types NLE, NLD and PB.*

(3d) Overhead Mechanism—

(3d1) The center post carrying the wings shall be suspended from a cup-and-cone ball bearing carried in a 4-wheel, roller-bearing overhead carriage to roll aside in truss-shaped supporting channel.

(3d2) The center structure carrying the wings shall be suspended from a stationary overhead cup-and-cone ball bearing in truss-shaped supporting channel with no ceiling slot.

(3d3) Center post shall be held in position by a locking device at top and by a socket in the floor. Bottom pivot shall not rotate in floor socket. Flush lever shall simultaneously release wings at top and bottom for free movement to sides of enclosure.

***Note:** Use paragraph 3d1 for types NTS and NTJ; paragraph 3d2 for types NLE, NLD and PB; paragraph 3d3 applies to all types.*

(4) Construction

(4a) For Wood Doors—Wings and enclosures shall be finished in *(specify)* veneer not less than ⅛ in. thick in 5-ply waterproof laminated, one-piece slab construction.

(4b) For Metal Plate-Overlay Doors—Wings and enclosures are to be finished in .050 in. *(specify metal)* plate overlay on 5-ply hardwood faced waterproof, laminated slab construction cores. Metal shall be in one piece sheets or with hair-line joints reinforced with riveted and sweated strips so as *to* be invisible on the finished surface.

(4c) For Hollow Metal Doors—Wings shall be constructed of 1¼ in. by 5 in. rectangular seamless tubing with welded joints and suitable reinforcements at hangers. Enclosures shall be built of *(specify)* gauge *(specify metal)* on welded steel frames.

***Note:** For hollow aluminum specify "special extruded sections."*

(4d) For Micarta or Formica Doors—Wings and enclosures shall be built of *(specify)* sheets applied under pressure with special adhesives to hardwood-faced 5-ply laminated, waterproof cores.

(5) Finish

(5a) For Wood Doors—Wood surfaces exposed on finished work shall be sanded to a perfect finish and given *(3 coat gloss varnish) (4 coat hand rubbed (color) enamel finish to approved sample).*

(5b) For Metal Doors—All finished surfaces shall be brought to a smooth fine-lined surface and properly treated to match approved sample.

(5c) For Aluminum Doors—All finished aluminum surfaces to be given electrolitic Aluminite finish.

(6) Glass

All glass in revolving wings and enclosures shall be *(¼ in. American polished plate) (7/32 in. drawn plate).*

(7) Hardware

The hardware shall include mortise bolt keylocks with *(standard) (masterkeyed)* cylinders, kickplates, pushbars and pushplates made of *(specify).*

(8) Ceiling Lights (Optional)

(8a) Two 10 in. spun *(specify metal)* dome ceiling lights shall be furnished, but not including lamps or wiring.

(8b) Two 10 in. flush hinged *(specify metal)* frame ceiling lights shall be furnished glazed with Lenslite including reflectors but no fixtures or wiring.

(9) Speed Control (Optional)

The speed of rotation of the revolving door shall be controlled by a hydraulic or liquid check type speed control installed in the overhead mechanism. This device shall prevent spinning or excessive speed at all times and shall be readily adjustable for adapting to traffic requirements.

GENERAL BRONZE CORPORATION

REVOLVING DOOR DIVISION

LONG ISLAND CITY, N. Y.

REPRESENTATIVES IN ALL CITIES

For Architectural Metal Work, Windows, Statuary Tablets and Memorials, see File Index

REVOLVING DOORS

IN BRONZE, ALUMINUM, NICKEL SILVER, STAINLESS STEEL AND WOOD

G.B.C. Revolving Doors Are Efficient, Durable, Attractive

Mechanism

Automatically collapsible and panicproof.

Speed Regulator

Permits free rotation of the revolving wings up to any predetermined rate of speed desired.

Sizes

Diameter of 6 to 7 ft. and 7 ft. as the height from the floor to the ceiling are recommended. An 11-in. cornice around enclosure covers mechanism.

Advantages

General Bronze Doors eliminate drafts, cold air, noise and dirt—save fuel—provide more comfortable working conditions—reduce initial cost of air conditioning and save on cost of operating air conditioning plant.

Specification

Furnish and install General Bronze Revolving Doors to be equipped with automatic collapsible panic-proof mechanism, in either chain or braceless type and a speed regulator. The mechanism shall be so constructed that the wings will fold from their revolving position to a wide open panic position instantly, when a force slightly greater than that which is necessary to revolve the wings, is exerted on any of two wings. Also, the mechanism shall permit the wings to be folded in a central open position, in a full open side position, and in central panic position with four wings folded like a book.

Provide a slot closer so that when wings are in operation there will not be an opening in ceiling.

On Metal Doors of Hollow Construction, bronze to be 12-gauge; aluminum, 10-gauge; stainless steel, 14-gauge; nickel silver, 12-gauge.

On Metal Veneer Doors on Wood Cores, bronze to be 20-gauge; aluminum, 16-gauge; stainless steel, 16-gauge; nickel silver, 20-gauge.

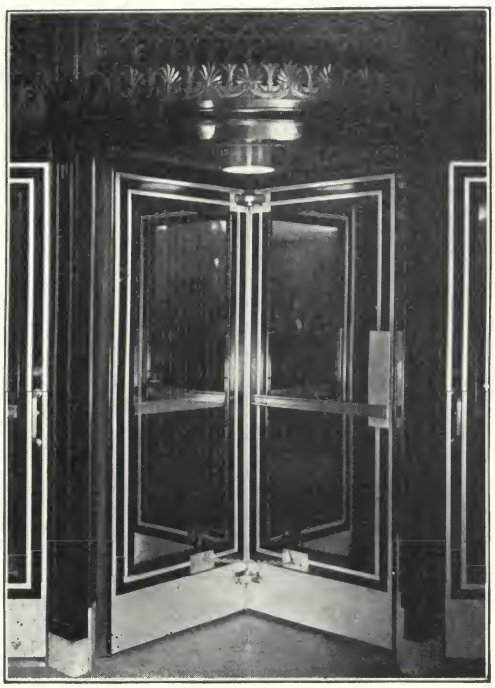
Wood doors use Birch, American Walnut, Mahogany, Plain or Quartered Oak.

For Complete Information on Revolving Doors, Send for Our Catalog

The International Building, Rockefeller Center, New York, N. Y.

Typical Revolving Door Installations

Emigrant Savings Bank, New York, N.Y.
Hamburg Savings Bank, Brooklyn, N. Y.
U. S. Post Office, Chicago, Ill.
Rockefeller Center, New York, N. Y.
Bowery Savings Bank, New York, N. Y.
First National Bank, New York, N. Y.
Rockefeller Plaza, New York, N. Y.
Chase National Bank, New York, N. Y.
Labor I. C. C. Bldg., Washington, D. C.
Dept. of Justice Bldg., Washington, D. C.
U. S. Post Office, Philadelphia, Pa.
U. S. Courthouse, New York, N. Y.
Dept. of Health Bldg., New York, N. Y.
Union News Co., New York, N. Y.
Building, 1372 Broadway, New York, N.Y.
East River Savings Bank, New York, N.Y.
Kress Building, New York, N. Y.
J. N. Adam & Company, Buffalo, N. Y.
N. Y. Telephone Co., New York, N. Y.
Hershey Chocolate Co., Hershey Park, Pa.
Hotel Biltmore Bar and Grille, New York, N. Y.
Clinton Trust Company, New York, N. Y.
Office Bldg., 1412 Broadway, New York, N. Y.
Office Bldg., 1375 Broadway, New York, N. Y.
Building, 75 Federal St., Boston, Mass.
Horn & Hardart Restaurant, 501 Fifth Ave., New York, N. Y.
Walgreen Drug Co., 30 Broad St., New York, N. Y.



The First National Bank, New York, N. Y.

INTERNATIONAL REVOLVING DOOR COMPANY

EVANSVILLE, INDIANA

LOCAL REPRESENTATIVES

CHICAGO, ILL., S. I. Kaufman, 19th Floor, Builders Bldg.
CINCINNATI, OHIO, Chas. M. Kreider, Inc., Room 2501, Carew Towers
CLEVELAND, OHIO, Wm. Pfeidler, 408 Swetland Bldg.
COLUMBUS, OHIO, Campbell J. Graf, 358 No. High St.
DAYTON, OHIO, G. H. Condit, 45 Patterson Rd.
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ST. PAUL, MINN., Hauenstein & Burmeister, Inc., 903 Bldrs. Exchange
ST. LOUIS, MO., Builders Specialties Co., 4000 Laclede Ave., Leonard Lukkason, Mgr.
TOLEDO, OHIO, Spencer Comstock, Security Bank Bldg.

REPRESENTATIVES IN ALL PRINCIPAL CITIES IN U. S. A.

INTERNATIONAL REVOLVING DOORS ARE PANIC PROOF

No. 1
Excess pressure being applied to wing

No. 2
Starting wings to folded position

No. 3
Wings folded back

No. 4
Outside view of folded wings

No. 5
Locking wings in revolving position

No. 6
Folded wings rolled to side

Some first-class cities require braceless construction in revolving doors. But all first-class cities specifically require "complete folding of revolving door wings flat against each other in an outward direction and this to be accomplished by applying against any one wing, a force or pressure slightly more than is necessary to operate doors or the wings to be so arranged that they will readily collapse by simple excess pressure." In other words, Panic proof, a protective measure for emergency situations.

International Revolving Doors are braceless and so constructed mechanically that they not only comply with the above requirements, but do so in the quickest possible time. An added measure of safety.

By reference to the pictures, a clear demonstration of this is brought out. Figure No. 1—Bracing one hand against a wing and the other hand pushing, with more than normal pressure, against the opposite wing. Result, "all wings are simultaneously released" as in No. 2.

By a simple follow through of this motion—swinging the said two wings around towards the other two remaining wings (see No. 3)—all wings are in the final state of collapse; completely folded flat against each other in an outward direction (see No. 4.) All in one manual and continuous follow through of the same effort.

An exclusive feature with International Revolving Doors.

INTERNATIONAL REVOLVING DOORS INCREASE REVENUES

The following plans show how the 255 sq. ft. of wasted floor area may be utilized for partial income area by means of providing more comfort through installation of International Revolving Doors and eliminating double line of doors and wind break panel, as indicated.

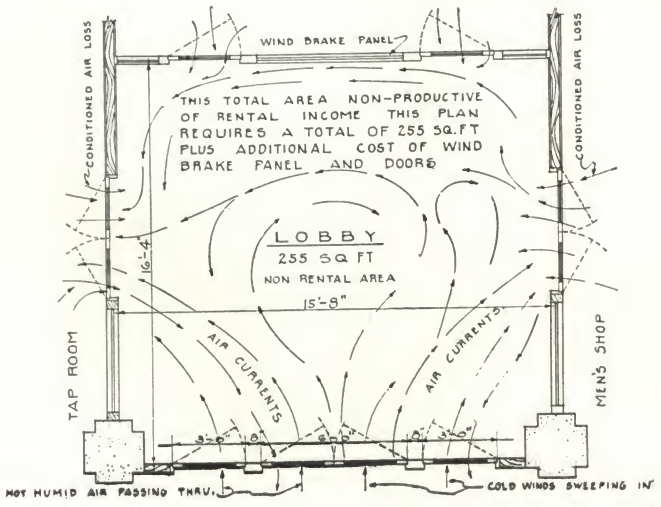
In this plan, the floor area set aside to accommodate the second line of doors is converted to revenue producing space—rented out on a concession basis. Thus an additional source of revenue for hotel owners is made possible through installation of International Revolving Doors.

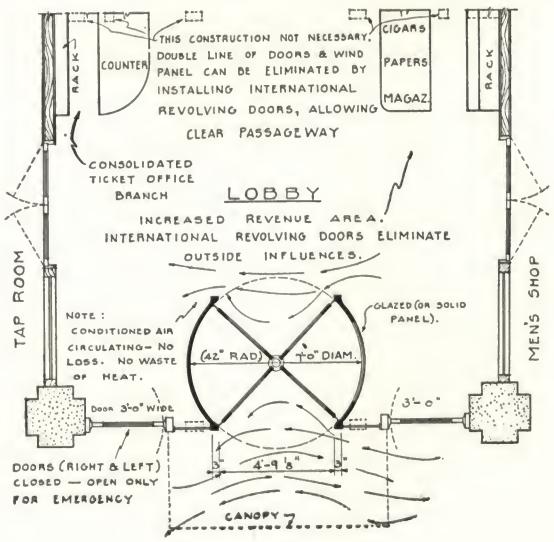
The saving effected in eliminating the second line of doors and panel will more than pay for the revolving door, with something to spare.

Plan at left shows how outside temperatures and dirt and noises are prohibited from entering, because International Revolving Doors are "Attractively closed at all times," yet permitting instant accessibility.

No sweeping cold winds or drafts can penetrate. Likewise, in summer, the hot, sticky, humid air will not pass through the air-sealed International Revolving Door.

Thus keeping operating costs of temperature control plants down to a minimum, all reflected by large savings in fuel bills.





WOOD VENEERED REVOLVING DOORS

The "Chatham" Wood

The "Chatham" model made of wood may be had in the natural grain or painted to suit the conditions.

The model pictured is the stock unit which is our commercial unit attractively priced. Furnished either with solid or glazed enclosure; single light of glass used in enclosure walls.

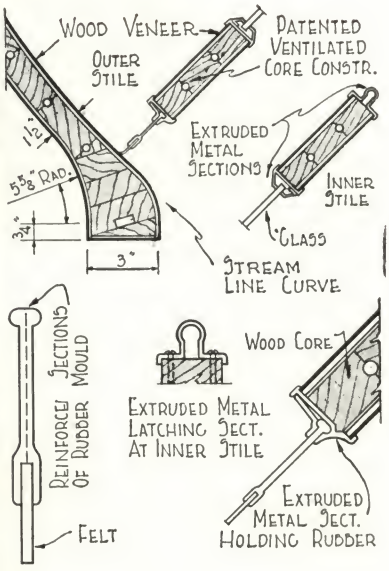
The wood models may also be had in modernistic types. Two decided and distinctive designs of this model are shown below and at right.

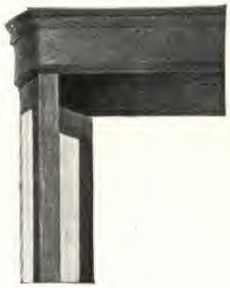
Stock models are equipped with push bar and plate as well as kick plate as shown.

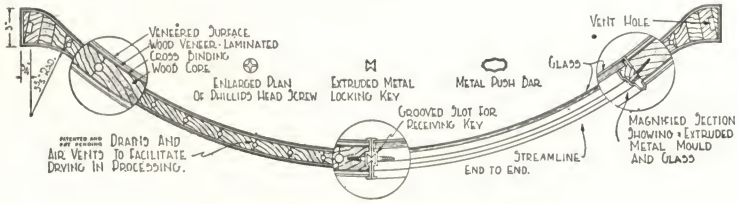
We are prepared to furnish variations of this design to meet your specific needs at costs based on such change; accurate interpretation of your designs and execution of same to your satisfaction.

The models in this series are all core-vented full height of wings and enclosures. Wood veneered finish applied under pressure with waterproof glue.

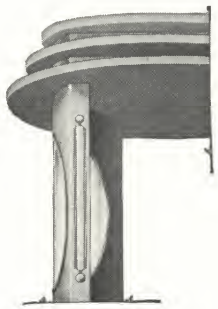
The "Chatham"—Model 500-W1
Hardware aluminum or bronze as desired



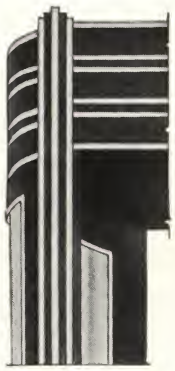




SECTION OF ENCLOSURE, SHOWING SOLID VENTILATED WOOD CORE—VENEER CONSTRUCTION, AND GLAZED PANEL, THE LATTER FURNISHED AS DESIRED



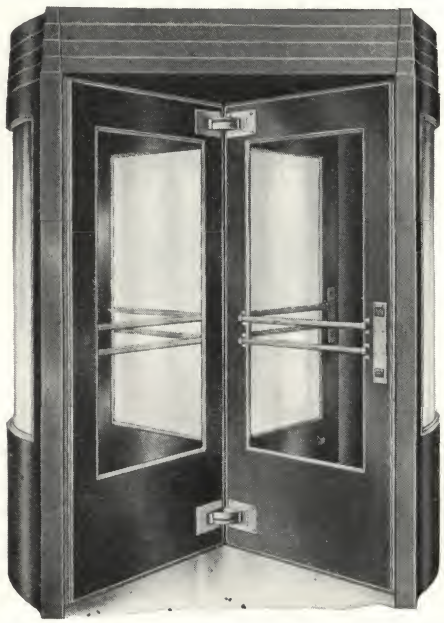
MICARTA VENEERED REVOLVING DOORS



Modification of Model 100-M with Metal Inlays and Facings

Enlarged Elevation of Pilaster and Facia. Solid Enclosure

The "Lido" model made of Micarta, either plain, solid color, or with metal inlays. Both sides of enclosure walls and wings are covered with one-piece Micarta as shown. A smooth even surface, free from waves, applied under pressure and heat, with waterproof adhesive. The success of this processing is due to the thorough draining and drying of moisture, made possible by our patented ventilated core.

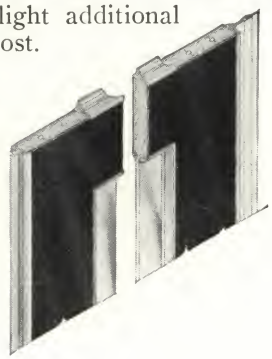


The "Lido"—Model 100-M2
Hardware aluminum or bronze as desired

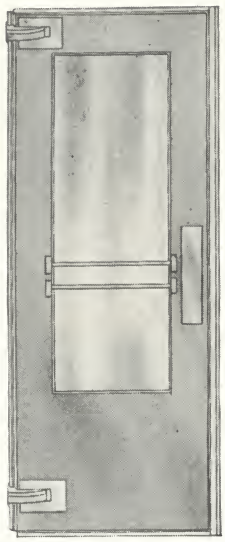
The possibilities in design or treatment of this "Lido" model are indicated in the elevations shown.

Extruded bronze and aluminum weather stripping furnished as desired, with hardware to match.

Stock model to have metal push bars in design shown above. Other designs to meet specifications can be secured at slight additional cost.



FORMICA VENEERED REVOLVING DOORS



Typical Elevation of Formica Door Wing—Stock Model with Bronze or Aluminum Extruded Members and Hardware to Match

The "Seville"—Model 200-F3

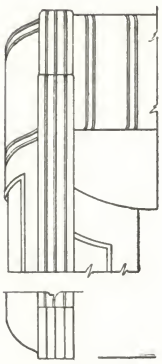
The "Seville" model made of combination colored formica and metal inlay. The F-3 pattern, as shown, offers many possibilities in elaborate designs.

This unit can be furnished in stock models, either with glazed or solid enclosure walls. Glazed walls are treated with circular glass, square glass with rounded corners or diamond shape glass, all bent to the desired radius.

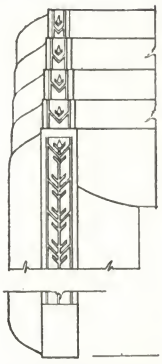
The enclosure walls and wings are all wood core ventilated from top to bottom as shown in section.

In special cases where exceptionally large glazed areas are desired in combination with formica inlays, we suggest the unit model 215 F-2 made in three sections. Key-locking bar at top and bottom rails adjacent to pilasters.

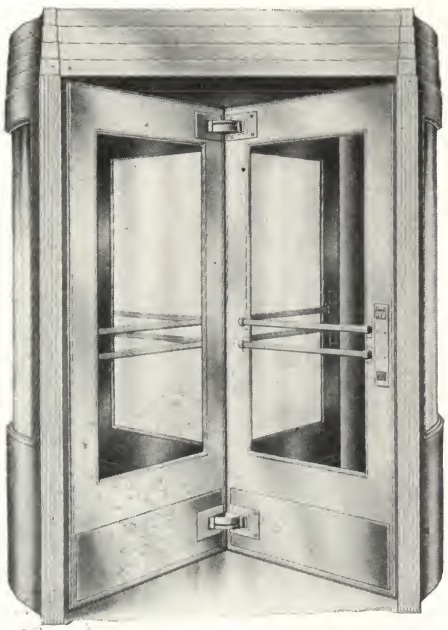
ALUMINUM VENEERED AND HOLLOW METAL REVOLVING DOORS



FACIA & PILASTER EXTR. OR CAST ALUM. TRIM SAND BLASTED OR HI-POLISH.



FACIA & PILASTER FACING ETCHED OR COLOR INLAYS.



The "Aristocrat"—Model 300-A2

The "Aristocrat" models are fashioned from smooth, one piece sheet aluminum on ventilated wood cores as shown. (See details.)

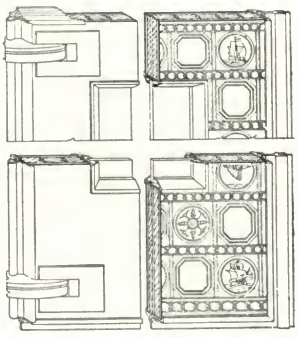
Stock models have "core-vented" wood base, laminated construction, made up of wood veneer on wood cross binding, finished and covered on outside with one-piece sheet aluminum applied in same manner as Micarta ("Lido") model.

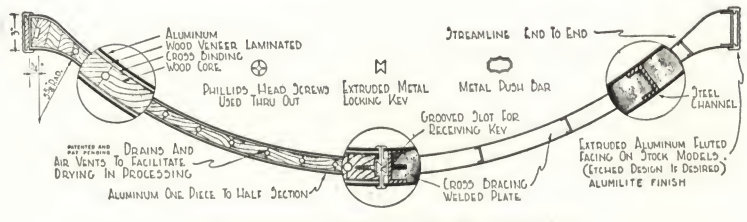
All wings and enclosure walls covered over all in like manner. In all our models, center stiles are omitted (unless otherwise specified) in glazed enclosures.

Surfaces of aluminum finished plain polished, or sand blasted; etched plain, two-tone, or in color inlay.

Furnished in hollow metal core if desired; in this case we are of necessity forced to use rivets to anchor and weld joints. (See details for hollow metal construction.)

Suggested treatment of pilasters and facias over entrances are shown. Solid or glazed enclosured.

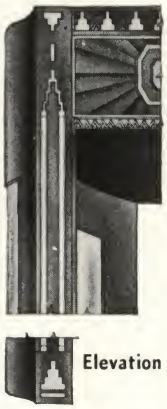




SECTION OF ENCLOSURE SHOWING METAL COVERED FACING ON BOTH SOLID VENTILATED WOOD CORE WALL AND HOLLOW METAL CORE WALL

BRONZE VENEERED AND HOLLOW METAL REVOLVING DOORS

Facia and Pilaster Extruded or Cast Bronze; Trim, Hi-Polish

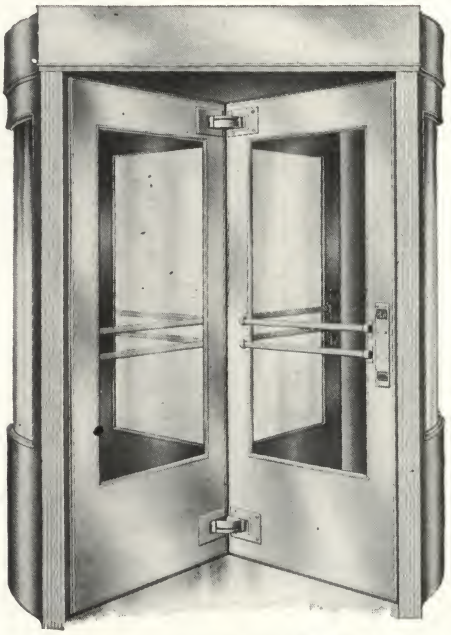


Elevation

Facia and Pilaster Etched Sheet in Plain or Color

The "Monarch" models are fashioned from smooth, one-piece sheet bronze; on ventilated wood cores.

Stock models have wood, "core-vented" base, laminated construction, made up of wood veneer on wood cross binding, finished and covered on outside with one-piece bronze, applied under pressure and heat in same manner as Micarta ("Lido") model.



The "Monarch"—Model 400-B1

All wings and enclosure walls covered over all in like manner. Center stiles omitted in enclosure walls (unless specified to contrary).

Note how wings are capped and sealed on all four sides with extruded bronze members. The inside stile of wings is capped with a flanged, beaded bronze roller from top to bottom, which seats into shaft housing, providing perfect air sealing, or metal encased in metal weather stripping.

We strongly recommend the wood core-vented metal veneer, battleship construction; covered with one-piece smooth bronze sheet, finished as desired, free from waves, joints, laps, rivets or other surface blemishes.

On the hollow metal core, we are of necessity forced to weld and use rivets to anchor one-piece bronze sheet to frame.

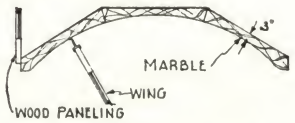
Treatment of pilaster face and facia over entrances offers considerable flexibility with sheet, extruded, or cast bronze sections; designs, etched or cast, hi-polish, dull, or satin finish—plain or color inlays.

Models furnished with solid panel or with glazed panel enclosures. Wings equipped with master locks if desired.

SIZES OF REVOLVING DOORS—SPECIAL DOORS

The table below shows the stock sizes of Revolving Doors for which there is a pronounced demand. We are prepared to build any special sizes desired with special types of enclosure walls.

We are also prepared to execute architects' designs of elaborate and artistic Perfume, Cosmetic and Hosiery Bars as well as Tap Room Bars, made of Veneered Wood, Formica, Micarta or in combination with metal. Unusual and intricate designs built to order.

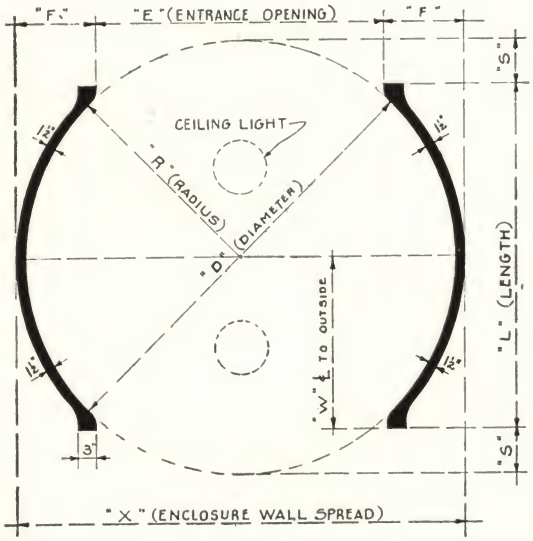


MARBLE ENCLOSURE WALLS FURNISHED ON SPECIFICATIONS.

FLEXED ENCLOSURE WALLS INSTALLED TO MEET CONDITIONS.

TABLE OF INTERNATIONAL REVOLVING DOOR SIZES

"D" Diam.	"R" Radius	"E" Entr. opg.	"X" Total wall spread	"F"	"L" Enclosure wall length	"S"	"W" Center line to outside	"R" Radius
6'- 0"	3'- 0"	4'- 0¾"	6'- 3"	1'-1⅛"	4'- 9⅛"	7 7/16"	2'- 4 9/16"	36"
6'- 2"	3'- 1"	4'- 2¼"	6'- 5"	1'-1⅜"	4'-10⅜"	7 13/16"	2'- 5 13/16"	37"
6'- 4"	3'- 2"	4'- 3⅞"	6'- 7"	1'-1 9/16"	4'-11½"	8¼"	2'- 5¾"	38"
6'- 6"	3'- 3"	4'- 4⅞"	6'- 9"	1'-2 1/16"	5'- 1⅜"	8 5/16"	2'- 6 11/16"	39"
6'- 8"	3'- 4"	4'- 6½"	6'-11"	1'-2¼"	5'- 2⅞"	8 9/16"	2'- 7 7/16"	40"
6'-10"	3'- 5"	4'- 8 "	7'- 1"	1'-2½"	5'- 4⅜"	8 15/16"	2'- 8 1/16"	41"
7'- 0"	3'- 6"	4'- 9⅛"	7'- 3"	1'-2 15/16"	5'- 5¾"	9⅛"	2'- 8⅞"	42"
7'- 2"	3'- 7"	4'-10¾"	7'- 5"	1'-3⅛"	5'- 6¾"	9⅜"	2'- 9⅜"	43"
7'- 4"	3'- 8"	5'- 0½"	7'- 7"	1'-3¼"	5'- 8 "	10 "	2'-10 "	44"
7'- 6"	3'- 9"	5'- 2⅛"	7'- 9"	1'-3 7/16"	5'- 9¼"	10⅜"	2'-10⅝"	45"
7'- 8"	3'-10"	5'- 2¾"	7'-11"	1'-4⅛"	5'-11⅜"	10 3/16"	2'-11 11/16"	46"



REVOLVING DOOR SPECIFICATIONS

Revolving Doors

Furnish and install where specified and shown on plans, International Revolving Doors, model No..... of the automatic Panic-proof (and traffic regulating) type.

Panic Proof Device

These revolving doors to be made up of such mechanism that, when a force slightly more than normal is applied to one wing, all wings will immediately and simultaneously release; and a manual effort will cause a complete folding back of all wings against each other in an outward direction.

All said mechanism to be assembled to a mainshaft of braceless wing construction and in turn supported and hung from the trolley device.

General

Under this contract there will be included circular enclosure walls of sweeping streamline construction free from jogs or sharp projections; flat ceiling (cornice cresting or enclosure facia as desired); revolving wings; glass; exposed hardware and complete mechanical parts.

Center Shaft Construction

Center shaft construction to be of steel, housed within an extruded bronze (or aluminum) shaft housing completely assembled, self contained unit, provided with lifting latch, opposed by compression spring to assure pivot of shaft, seating accurately during the operation of revolving door wings. Shaft column to have two hinge mounting discs (upper and lower) of metal to match shaft housing, each to contain simultaneous release mechanism, which permits of manual collapse of all wings in an outward direction as required by ordinance.

Center shaft housing to be extruded metal with annular arms each cupped to receive metal ends of inner wing stiles; the same to be integral with housing member and so projected to assure accurate seating or recessing of end wing bead on inner stile of wings, the full length of shaft. In other words, "metal encased in metal" sealing against weather.

These annular arms on shaft housing to be full length of same and to mesh with full length metal bead on all inner wing ends to give substantial weather sealing at pivot line.

Wings

To be of wood core (or hollow metal) construction as specified and shown on drawings.

To be furnished in (kind of material—as specified and indicated on drawings).

All wings (metal capped and sealed at ends) to be provided with an extruded metal bead on inside end, along entire length of stile, to preserve alignment, and rigidity of wings at pivot line; and to be joined (with mitered corners) to metal capped weatherstrips on all other ends of wings—to thus assure resistance to torsional strain that may be developed in the wings from constant and daily service, or in changing from the usable or revolving position to the emergency release or emergency exit position.

Weather Strips

Weather strips to be integral unit, of moulded rubber, fabric and felt, thoroughly vulcanized, to act as a weather seal at wing ends.

Overhead Trolley

Wings to be assembled to main shaft, which in turn is securely anchored to and suspended from over head trolley or carrying member.

Trolley to be constructed of pressed steel parts, including wheels and track housing.

Trolley to be provided with means for rolling all wings to one side of enclosure.

The clearing of the enclosure to be accomplished by means of lifting the locking latch in shaft, which in turn releases both the base and top, permitting free travel of the trolley to one side.

Hardware

Exposed hardware consisting of push bars, push plates and key locks, to be of suitable metal finished to match shaft housing, extruded members and metal covering. (Kick plates and master key lock optional.)

Enclosures

To be wood core (or hollow metal) construction as specified and shown on drawings.

To be finished in (kind of material—see drawings).

The walls of the enclosures to be built in two units—one each for opposite sides of entrance (each unit to consist of two half-sections with metal notched caps at both center ends).

An extruded metal bar key to be furnished for locking together both half-sections securely and rigidly.

Glass

Glass—good quality of American Polished Plate Glass of ¼ in. thickness.

Glass moulding to match exposed hardware and of such character and design as shown on drawings.

Ceiling Lights and Pilaster Lights (Optional)

Two flush ceiling lights to be furnished, including reflectors and removable glass covers, but not to include any electric fixtures (this latter item and wiring are to be included under electric contract).

Traffic Control and Safety Brake (Optional)

Speed of revolving wings is to be controlled by a mechanical device, all attached and assembled in the trolley carriage. The speed is predetermined, and an adjusting screw (easily and readily accessible without need of dismounting parts) is set to maintain same, preventing spinning at undesirable speed during operation. This controller screw to be so constructed that it may be adjusted from time to time to meet changing conditions and for handling maximum traffic within a given time.

VAN KANNEL
REVOLVING DOORS

ALWAYS OPEN...ALWAYS CLOSED

VAN KANNEL REVOLVING DOOR CO.
101 PARK AVENUE, NEW YORK, N.Y.

The Van Kannel Revolving Door Company

. . . . its scope and service

VAN KANNEL is the pioneer manufacturer and original patentee of revolving doors. The company's patents cover every practical improvement and substantial feature. It offers a complete service in the design, manufacture, installation and maintenance of revolving doors of the most modern and improved type.

As described in the following pages, Van Kannel products are:

● VAN KANNEL REVOLVING DOORS

Both Four Wing and Three Wing

Made in standard and special designs, with automatic collapsible panic-proof mechanism.

● TRAFFIC ADAPTER

An adjustable governor for automatically regulating the revolving door to a comfortable speed for either rapid or slow moving traffic.

Also VAN KANNEL REVOLVING PANTRY PASS WINDOWS

For passing of food between kitchen and pantry, without passage of cooking odors.

Childs Restaurant
Lexington Avenue at 51st Street, New York

VAN KANNEL SERVICE

Architects, contractors and owners have found that the revolving door is a specialty that requires exceptional experience and training for its successful manufacture, installation and service. Van Kannel has developed a capable service organization in more than 100 cities throughout the country. This organization has been an important factor in the excellent record for durability and reliability of Van Kannel revolving doors and the many economies made by them.

Engineering Service

Van Kannel engineers and representatives are widely experienced in analyzing entrance conditions to determine the economic value of a revolving door for any entrance. Such an analysis will show the savings and economies to be effected by a revolving door suitable for the entrance. This service is available to architects and owners.

Field Service

Van Kannel revolving doors are installed and serviced by trained, responsible men. This is as essential for satisfactory operation as high quality construction. A successful revolving door depends on excellent workmanship and thorough care in installation—*both* must be of the best for a smooth operation and reliable service. In Van Kannel revolving doors both are assured—*by adequate manufacturing facilities—by a thoroughly experienced service organization.*

VAN KANNEL REVOLVING DOOR CO.

101 PARK AVENUE • NEW YORK, N. Y.

For list of Representatives, see Back Cover

Van Kannel Revolving Doors

The necessity for revolving doors at the entrance to modern buildings, banks, restaurants or stores is caused by modern intensity of draft and traffic. The lack of protection and capacity of hinged or swing doors or swing door vestibules makes them inadequate to meet the needs of modern conditions.

The primary benefit of revolving doors results from the principle of operation which makes it possible for a Van Kannel Revolving Door to be • • • •

"ALWAYS OPEN" • "ALWAYS CLOSED"

"Always Open" as a Convenient, Easy Entrance to the Public

A modern revolving door always rotates without effort and at a convenient rate of speed.

Being in perfect balance, it is not affected by wind or suction pressures.

Its rotation divides traffic naturally to the right and left, obviating confusion.

Its speed control (the Traffic Adapter) regulates the speed to the volume of traffic—never more than a normal walking rate—providing capacities far in excess of hinged door entrances.

This controlled operation makes the Van Kannel Revolving Door especially suitable for entrances to stores or buildings from which people carry packages, since the operation of the revolving door simply requires that the user walk through and lean or push against a wing. There is no necessity to disturb or re-arrange bundles or packages and no interference with other traffic.

"Always Closed" to Drafts and Wind, either Hot or Cold, and to Dust, Snow or Rain

This feature of the revolving door protects valuable sales areas or lobbies near the entrance from the costly handicap of drafts and chill in winter and the heat and humidity in summer.

It prevents losses by shutting out the dust and dirt of present-day streets.

It reduces the cost of heating in winter and the cost of air conditioning in summer.

Hotel Essex, New York

VAN KANNEL QUALITY

Van Kannel Revolving Doors have always been built to the highest standards of workmanship and material. This is demonstrated by the hundreds of Van Kannel Revolving Doors which have given continuous day-in and day-out service for 20, 30 and 40 years and are still operating satisfactorily. This quality construction has resulted in an enviable record of durability and service, and has proven that a well-built revolving door is the most inexpensive entrance for a modern building. Many large operators of real estate have found revolving doors more economical to maintain and operate than swing doors and door checks.

THE OPERATING PRINCIPLE OF THE REVOLVING DOOR

A revolving door consists of three or more wings mounted on a central shaft rotating as a unit inside a circular enclosure. The door is so designed that the entrance is *always sealed* against drafts or air flow. Persons entering or leaving the building pass through the compartment formed by any two of the wings, operating the door by pushing or leaning against the wing directly ahead. As the wings are always in contact with both sides of the circular enclosure, use of the entrance does not break the seal of the opening against draft or air flow.

Continuous improvements have made the modern Van Kannel Revolving Door the most convenient type of entrance and the most suitable for heavy traffic. Being in perfect balance against wind and suction pressures, Van Kannel Revolving Doors always operate with effortless freedom at normal speeds.

The Traffic Adapter—This is a control which prevents speeds in excess of a normal walking rate. It increases the normal capacity of the door and avoids the inconvenience and discomfort which results from excessive speed.

Collapsible and Panic-proof—Modern revolving door mechanism is so designed that excessive pressure on any wing causes it to be released and to fold about the center shaft before damage or injury can occur. In emergencies or panics, pressure on the wings *instantly* releases them from their radial position and collapses them like the pages of a book, folding them outward in line of egress. This leaves a free unobstructed passageway on both sides of the center shaft.

The center shaft is carried on an overhead roller bearing trolley and track. When desired, the wings may be folded in pairs and rolled to one side of the opening, leaving a clear, unobstructed passageway.

Petroleum Building, Chicago

REVOLVING DOORS
Reduce Heating Costs

There are two principal entrance difficulties in the heating season:

1. Difficult Door Operation

This difficulty is due to wind pressure and to suction pressure resulting from the chimney action of tall buildings or by the suction of exhaust fan ventilation. These combined pressures frequently act so severely on swing doors that they are difficult and even dangerous to handle. Door checks must be continually maintained and adjusted to meet varying conditions and temperatures.

A revolving door, *which is always in perfect balance,* eliminates this difficulty and expense. Its operation is uniformly easy and regular under *all* conditions of wind pressure, suction pressure and temperature. It assures satisfactory, convenient, effortless operation month-in and month-out.

2. Infiltration Losses

The second difficulty, and the more important, is caused by the intense entrance drafts and excessive infiltration resulting from the wind and suction pressures referred to above. Under normal winter temperature (approximately 35° F.) the combined effect of wind pressure and suction pressure produces entrance draft velocities that vary between 10 and 30 miles per hour, depending upon the height of the building, the chimney action or the exhaust suction. In severely cold weather, these velocities become excessive . . . the chimney action of tall buildings frequently producing draft velocities of 60 miles per hour.

Returning to a consideration of normal conditions, we find that the operation of a single swing door causes a draft opening per person which is equivalent to a full door opening for a period of two seconds. The draft volume for each person passing through a single swing door entrance varies from 600 to 1800 cu. ft. With a swing door vestibule, which actual tests show to have an equivalent full draft opening of 1.5 seconds for each person, the draft volume varies from 450 to 1350 cu. ft. per person passing through.

Revolving doors, by actual tests in the field and laboratory, show an average displacement of 26 cu. ft. per person passing through. This volume is not affected by variations in draft pressure or wind pressure. It depends only on the size of the revolving door and the number of people using it. When more people use it, it becomes more efficient, for the cubic feet per person is lower as the operation speeds up.

COMPARATIVE INFILTRATION—REVOLVING DOORS VS. SWING DOORS

Height of building	Average draft velocity under normal winter conditions, miles per hour	Infiltration (cubic feet per hour) with 1000 entrance passages per hour—500 "in," 500 "out"		
		SWING DOOR 2 seconds effective draft opening per person	SWING DOOR VESTIBULE 1.5 seconds effective draft opening per person	REVOLVING DOOR
10 Floors or usual restaurant exhaust ventilation	14	820,000	615,000	26,000
20 Floors	16	940,000	700,000	26,000
30 Floors	18	1,030,000	790,000	26,000
40 Floors	20.5	1,200,000	900,000	26,000

CLASSIFICATION OF USES

In BANKS
revolving doors provide:

Protection to officers, customers and employees against the chilling discomfort of wasteful, dangerous entrance drafts. Better health, greater efficiency, more business.

The most convenient and accessible entrance. Revolving doors operate without effort under all conditions of wind pressure and cold weather. They always assure greater capacity by the orderly division of traffic.

A saving in fuel varying from $60.00 to $600.00 per year.

A material saving in the cost of installing and operating an air-conditioning plant.

The elimination of dust and dirt from the street.

Low cost of maintenance for entrance doors.

A substantial saving in building cost by reduced radiation requirements, the elimination of swing doors and ineffective vestibules.

With modern safety mechanism and speed control, the prevention of entrance accidents and elimination of confusion.

In HOTELS
revolving doors provide:

Assurance of a comfortable, draftless lobby . . . providing complete comfort for guests under all weather conditions.

The most convenient and practical hotel entrance. Porters loaded with luggage merely push their way through . . . no holding the door open to chill the interior . . . no interference with other traffic.

Protection of health and increased efficiency of employes stationed in the lobby, through the elimination of drafts and chill.

Reduction in the cost of heating plant and an annual saving in cost of fuel.

Saving in initial cost of air-conditioning system and in annual cost of operation.

Protection to furnishings and decorations, preventing depreciation by dust and dirt carried in by entrance drafts.

A balanced door which operates without effort under all weather conditions. There is no expense for adjusting and maintaining swing doors and door checks.

Traffic control that provides maximum capacity with an orderly division of "in" and "out" traffic.

Freedom from entrance accidents and inconvenience.

In RESTAURANTS
revolving doors provide:

Increased sales in the valuable area near the entrance by protection against the handicaps of drafts and chill in the winter and of heat, dust and dirt from the street in summer.

Improved health and efficiency of cashiers, waiters and other employes by the elimination of severe entrance chill.

A saving in fuel and in the cost of radiation for winter heating.

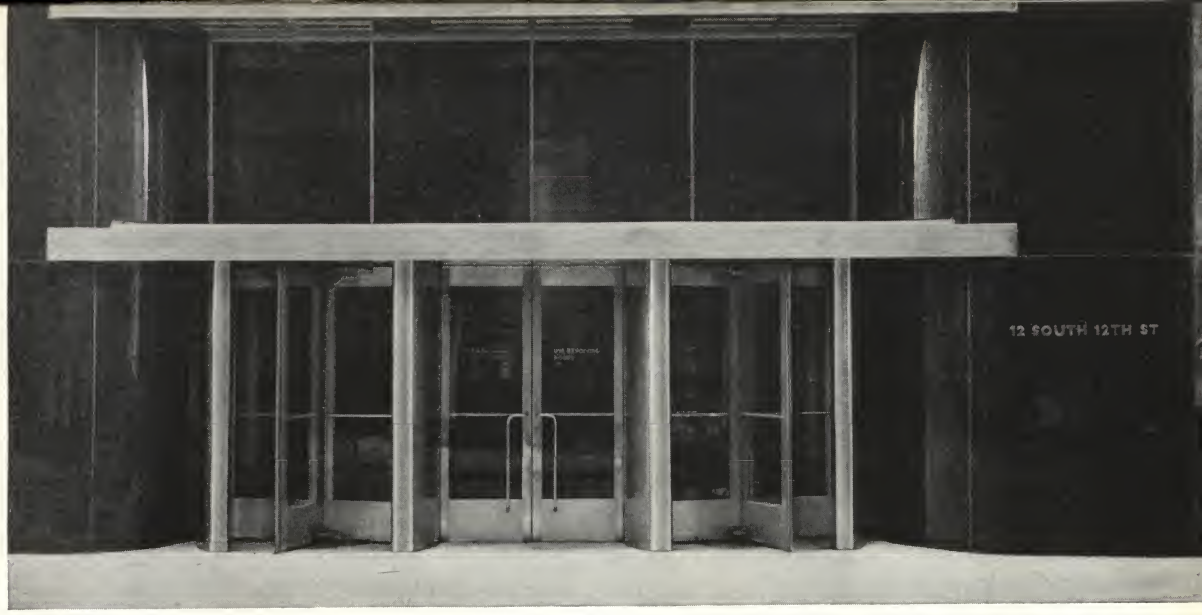
A material saving in the cost of installation and operation of an air-conditioning plant.

Elimination of dust and dirt from street drafts . . . improving sanitation and reducing the cost of cleaning, dusting and re-decorating.

Lower maintenance cost than other types of doors.

Greater convenience and capacity for entrance traffic. Revolving Doors are not affected by wind pressure or suction pressure but *always* operate without effort at a controlled rate of speed.

VANKANNEL
ALWAYS OPEN
ALWAYS CLOSED
REVOLVING DOOR ©



No. 12 South Twelfth Street, Philadelphia

REVOLVING DOORS
Reduce Air Conditioning Costs

In the case of a store or building which is air-conditioned for summer cooling, the value of a revolving door is doubled. It protects against dust-laden, superheated humid air being swept in from sun-baked sidewalks and pavements and is as important, for economical operation, as a means of preventing loss of cooled conditioned air in summer, as it is in the prevention of air infiltration in winter.

The principal need for a revolving door in connection with air-conditioning (summer cooling) is the elimination of entrance infiltration. In hot weather, infiltration is due primarily to entrance drafts caused by wind velocity. In modern cities, the eddy currents and pressure areas caused by the obstruction of large buildings, induce entrance drafts even where there is no direct exposure to prevailing winds. The operation of the air-conditioning unit itself frequently creates a difference in pressure that causes entrance infiltration or ex-filtration that represents a waste of cooled, conditioned air.

This entrance infiltration, which occurs during the opening and closing of doors as people pass in and out, causes an average displacement of 150 cu. ft. of air per person passing through a single swing door entrance, and 125 cu. ft. for each person passing through a swing door vestibule entrance, in stores or buildings having more than one entrance. As compared to this, the average displacement of a revolving door . . . depending on the size of the door and the number of people using it . . . is 26 cu. ft. for each person passing through the entrance. The reduction of 100 to 125 cu. ft. of infiltration per entrance passage where revolving doors are used represents the exclusion of a vast amount of hot, humid dust-laden air that seriously affects the efficiency of the air-conditioning installation.

As indicated by the following table, the economies resulting from the use of a revolving door depends on the number of people using the entrance . . . the more traffic the greater the need for protection.

REDUCTION IN COOLING LOAD GAINED BY USE OF REVOLVING DOORS IN STORES OR BUILDINGS WITH TWO OR MORE ENTRANCES

Number of persons entering and leaving per hour.....	100	400	800	Wide open double door
Saving in infiltration, cu. ft. per hour.....	20,000	80,000	200,000	500,000
Saving in cooling load, tons capacity.....	1	4	9	23

OR REVOLVING DOORS

In OFFICE BUILDINGS revolving doors provide:

Protection against entrance drafts caused by severe chimney action of tall buildings, resulting in:

- Increased comfort for tenants, visitors and employes.
- Saving in fuel.
- Improved health and efficiency of employes.
- Greater value to cigar stands and other concessions.

The most convenient and accessible entrance. Revolving doors operate without effort under all conditions of wind pressure and cold weather. Furthermore, greater capacity is provided by modern controlled speed and the orderly division of traffic.

Reduction in cleaning and decorating by the elimination of dust, dirt and filth from street drafts.

Lower cost of maintaining entrance doors than is possible with swing doors and door checks.

A lower first cost of the building, resulting from savings in radiation and elimination of ineffective swing door vestibules.

In DEPARTMENT STORES revolving doors provide:

Increased sales in ground floor areas near the entrance. Drafts and chill from entrance doors are eliminated in winter, and heat, dust and dirt from entrance doors are excluded in summer.

Improved health and efficiency of employes on the street floor by the elimination of entrance drafts and chill.

Reduced depreciation of merchandise on display near the entrance as the result of the elimination of dust, and dirt from the street.

A saving in fuel and in the amount of radiation needed in winter for heating.

A substantial saving in the cost of installing and operating an air-conditioning plant.

Less cleaning and dusting of stock, merchandise, walls, fixtures and furniture.

An entrance door which is always easy, convenient to operate and with a minimum of upkeep and expense.

Greater capacity and better traffic control due to speed regulation and natural division of traffic to right and left.

In SHOPS revolving doors provide:

Vital protection to small sales areas against the serious handicap of chilling blasts from the entrance doors in winter, resulting in:

- Increased sales . . . the result of comfortable conditions for both customer and employee.
- Saving in fuel.
- Improved health and efficiency of employes.
- Marked reduction in depreciation of displayed merchandise because of the elimination of dust and dirt from the street.

In summer, protection against hot air from sun-baked pavement and sidewalks bring:

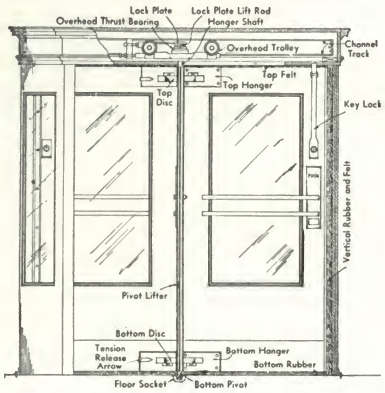
- Reduced cost of air-conditioning plant and its operation.
- Further saving in depreciation by shutting out dust-bearing drafts.

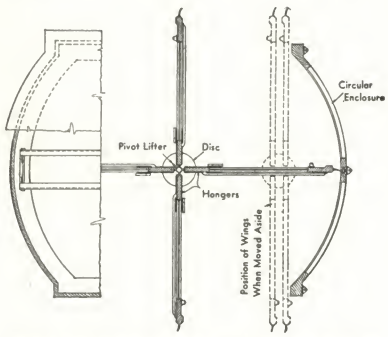
Greater capacity and convenience of entrance due to the effortless operation and the division of incoming and outgoing traffic at a controlled rate of speed.

Protection to paint and decorations by the elimination of dust and dirt.

Elimination of the cost of excess radiation and wasteful vestibule.

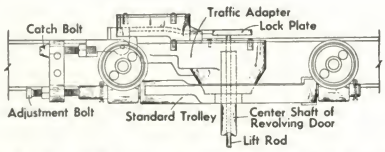
GENERAL CONSTRUCTION AND OPERATION





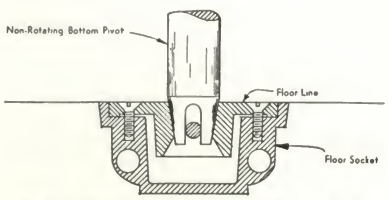
Revolving Door Mechanism

Center shaft assembly showing overhead trolley track, trolley and locking device, floor socket, pivot, pivot lifter and lift rod, discs and hangers.



Elevation of Overhead Trolley and Traffic Adapter

Showing self-aligning construction and locking device.



Elevation of Bottom Pivot

●

Three Wing Door

While we do not recommend the three wing door for general purposes, it may be used where space is limited and traffic requirements are not heavy. Three wing doors vary in diameter from 4′8″ to 5′6″. They may be used effectively to provide a sealed entrance to toilet rooms, photographic and x-ray rooms, etc.

The Basic Principle

A revolving door is made up of three or more (usually four) wings mounted on a vertical central shaft, the entire assembly rotating as a unit within a circular enclosure. Persons entering and leaving the building pass through the door in the compartment between any two wings as the door rotates. Since two or more wings are always in contact with the circular enclosure—*from wall to wall*—persons may enter and leave the building without opening the entrance to the passage of air or drafts. Thus the slogan: "*Always Open*"—"*Always Closed.*"

The basic principle of the revolving door, i.e. four wings hung on a central shaft, rotating within a circular enclosure, has remained unchanged, but the design and operation has been improved from time to time for greater convenience and to make the entrance more accessible.

Construction Details

Wing Support—The four wings are supported at the center shaft on two discs to which hangers supporting the wings are pivoted, so as to allow a movement of 135°. The wings are held in their radial position by an engagement between the hangers and the discs. This engagement may be released to permit the wings to be folded in pairs. When folded, a secondary engagement holds the wings in a balanced position.

Central Shaft and Trolley—In modern revolving doors, the central shaft is supported overhead by a self-aligning ball bearing, mounted on a four-wheel trolley which runs on an overhead channel track. This trolley is held securely in central position by an automatic lock. The bottom of the shaft is held in the central position by a non-rotating pivot in the floor.

Release Lever—A release lever, located at a convenient height on the center shaft, may be raised to release both the bottom pivot and the overhead trolley. With the wings folded and the trolley and center shaft released, the wings may be rolled to the side of the enclosure, providing a clear opening, when needed, for the movement of furniture or equipment.

Panic-proof Feature—The engagement between the discs and hangers which holds the wings in radial position is a resilient support which is instantly released by any excess load or pressure against the wings. This makes the door automatically collapsible in case of a panic, for the pressure of a crowd would cause all the wings to fold outward like the leaves of a book, providing a clear passage on each side of the collapsed wings and center shaft.

Weatherstripping—The contact between the wings and the circular enclosure is maintained by wide rubber and felt weatherstrips which brush against the sidewalls, ceiling and floor, giving a tight seal against draft and air infiltration at all times.

Speed Control—The speed of rotation is controlled by a traffic adapter (centrifugal governor) which is located in the overhead trolley. Speed can be adjusted to suit the traffic and any excessive speed is prevented.

Design—Revolving doors are built of any wood or metal to harmonize with any architectural design.

Wood—Wood doors and enclosures are built-up of five-ply core and veneer construction in accordance with the highest standards of workmanship and material.

Metal—Any kind of architectural metal may be used in the construction of revolving doors—bronze, copper, brass, nickel, silver, monel metal, steel, stainless steel or aluminum.

Other Materials—Other materials, such as Micarta or Formica may be used in place of wood or metal veneers.

Construction—It is recommended that metal doors be built by fitting the metal veneer (approximately 16-gauge) to a wood core and cementing it in place under pressure, the same as a wood veneer. This assures added strength and durability, with less weight than is possible with hollow metal construction.

Revolving doors can be (and many have been) built of hollow metal construction, but the combined weight of the four wings makes this construction less desirable than the metal overlay on wood core.

The circular walls support the ceiling, cornice and overhead mechanism. They may be finished on the inside only, for assembly within other construction, or they may be finished inside and outside with glazed panels and cornice as a complete unit.

Sizes

Four wing revolving doors are commonly made 6′10″ or 7′0″ high and vary from 5′6″ to 7′6″ in diameter. It is recommended that the height be kept below 7′6″. The most popular diameter is 6′6″, but where space is limited a 5′6″ diameter door is very satisfactory. At entrances to hotels or post offices, where hand luggage or bundles are carried, a 7′0″ diameter door is recommended.

Flexed Walls

Where it is desired to secure the maximum clear width when the wings are folded or rolled aside to provide for the handling of automobiles or other large displays, the enclosure walls can be hinged to spread the opening.

Sliding Gates

Revolving doors are frequently closed at night by either straight sliding or circular sliding doors or gates. The Van Kannel supporting hardware for these sliding doors is most satisfactory and trouble-free. Details will be furnished upon application.

OF VAN KANNEL REVOLVING DOORS

Capacity Tests

At a normal walking rate, a revolving door rotates 15 revolutions per minute. Each revolution provides unobstructed passageway for four persons both "*in*" and "*out.*" With the modern Traffic Adapter, which prevents speeds in excess of those needed to handle the traffic, full load capacity is readily obtained since, at a comfortable speed, each compartment can be occupied. Thus the normal full hourly load capacity of a revolving door is 3,600 persons "*in*" and 3,600 persons "*out.*"

This has been exceeded in a number of instances as in the test at Marshall Field & Co., Chicago, and at several entrances to the offices of large public utilities where the speed of rotation has been set at 18 revolutions per minute.

It will be evident, from the data given below, that the traffic in the busy entrances to the largest and most active office buildings, banks and restaurants, does not tax the normal capacity of a Van Kannel Revolving Door.

DATA ON TRAFFIC COUNTS AND CAPACITIES
(Made on Single Revolving Doors)

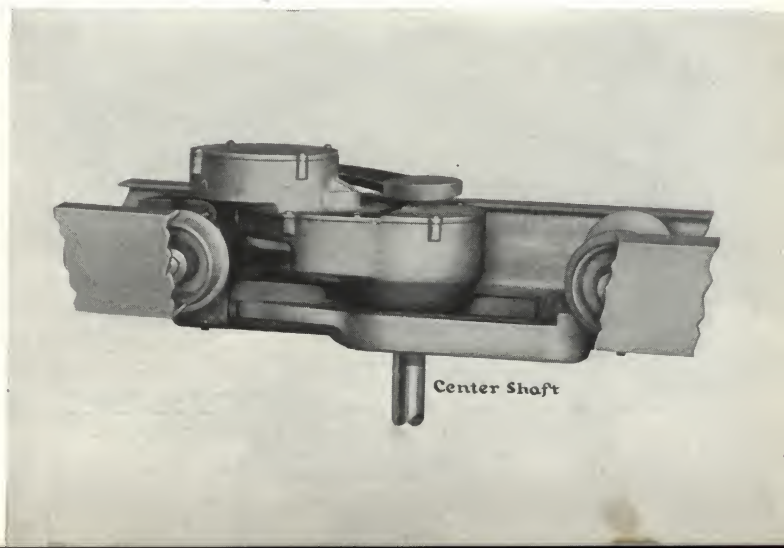
Name and Location	Duration of Test	Total Number of Persons	Rate per hour in One Direction *Based on maximum number of persons passing in one direction for 15-minute period*
Marshall Field & Co., Chicago, Ill.	10 minutes (5:00 to 5:10 P.M.)	1,075 Out 57 In	6,300 Out 332 In
R. H. Macy, New York, N. Y.	1 hour	2,303 In 1,988 Out	2,708 In 2,320 Out
Gimbel Bros., New York, N. Y.	1 hour	1,327 In 77 Out	1,604 In 95 Out
Y. M. C. A., New York, N. Y.	1 hour	398 In 355 Out	480 In 440 Out
Hotel Commodore, New York, N. Y.	1 hour	240 In 295 Out	376 In 420 Out
Hotel Astor, New York, N. Y.	30 minutes	478 In 427 Out	960 In 854 Out
Childs Restaurant, New York, N. Y.	1 hour	1,134 In 487 Out	1,228 In 680 Out
Bank of United States, New York, N. Y.	15 minutes	109 In 110 Out	436 In 440 Out
World Building, New York, N. Y.	1 hour	496 In 629 Out	564 In 740 Out
Commercial Cable Building, New York, N. Y.	1 hour	1,018 In 1,034 Out	1,104 In 1,164 Out
Bank of Commerce Building, New York, N. Y.	1 hour	961 In 679 Out	1,192 In 800 Out
Equitable Building, New York, N. Y.	10 hours	9,046 In 8,508 Out	1,142 In 1,815 Out
Barclay-Vesey Building, New York Telephone Co.	1 hour	31 In 674 Out	40 In 1,660 Out
Hudson Terminal Building, New York, N. Y.	1 hour	2,192 In 1,669 Out	3,208 In 2,520 Out

Van Kannel Traffic Adapter (Speed Control)

The Van Kannel Mechanical Traffic Adapter can be applied to any Van Kannel Revolving Door . . . old or new. This device is incorporated in the overhead mechanism without structural changes. It is a simple and dependable centrifugal brake. An easy, permanent adjustment holds the brake out of engagement at normal speeds, but causes it to act as soon as the desired maximum speed is reached. This prevents any excessive speed or spinning. The revolving door always rotates at a comfortable, convenient speed which can be adjusted to handle crowds rapidly or slowly.

The Van Kannel Mechanical Traffic Adapter, like the revolving doors themselves, is built for years of satisfactory and trouble-free service. Steel gears . . . shafts mounted in felt-sealed ball bearings . . . heavy duty brake lining . . . combine to insure years of dependable operation.

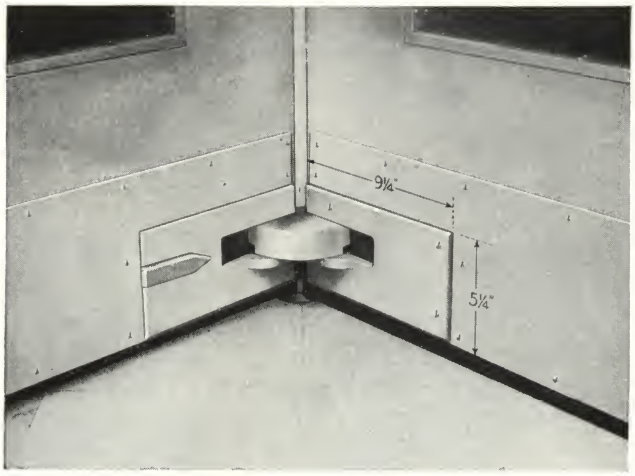
This device meets the requirements of the U. S. Government standard specifications.



SIMPLE RUGGED DESIGN

Type "AA" PANIC-PROOF

A MODERN REVOLVING DOOR with mechanism developed and perfected by VAN KANNEL as the result of fifty years research and experience



Enlarged View of Self-bracing Hanger

No cables are used to hold the wings. Note arrow cams for releasing socket for easy manual operation. Note size . . . top hanger same size.

Design and Construction

In appearance and design, Van Kannel Type "AA" Revolving Doors are entirely in keeping with the present-day vogue for simple, clean-cut, straight line effects . . . *no braces* . . . *no cables* . . . *no chains.*

This outstanding improvement in revolving door construction is made possible by the unique mechanism which

(*1*) holds the wings firmly in their radial operating position, and

(2) makes it possible for the wings to collapse automatically to a folded position when the pressure on them exceeds the predetermined resistance for which the mechanism has been adjusted.

Thus, Type "AA" doors are entirely panic-proof and provide a new measure of safety in emergencies necessitating a clear, unobstructed passageway. The mechanism is ruggedly constructed throughout for long, dependable service.

In Type "AA" doors the wings are mounted on hangers supported by a pivoted connection to heavy discs both at the top and at the bottom. An adjustable spring and socket engagement between each door hanger and the disc provides an independent radial support for the wing. It also acts as a safety release in case of an emergency.

AUTOMATIC COLLAPSIBLE REVOLVING DOOR . . . .

without Cables or Braces

Panic-Proof

Type "AA" doors are panic-proof because pressure of a crowd rushing against the wings will cause all four wings to collapse *outward* in line of egress, causing them to fold together like a book and permitting free passage on both sides of the center.

Setting the tension on each wing for the desired collapsing pressure is quickly and easily accomplished. No dis-assembly is required for this purpose. Once the resistance is set, it maintains a permanent, uniform tension. Releasing the tension manually for folding does not vary the adjustment and, when the doors are re-set in their operating position, the tension is automatically re-established exactly as it was before folding.

When the wings are folded in pairs, they are automatically held in folded position by a secondary engagement incorporated in the mechanism between the hanger and disc. No separate folding bars or keepers are required.

Few Wearing Parts

Type "AA" Van Kannel Revolving Doors have fewer parts and are the most durable doors we have ever manufactured, notwithstanding that there are many Van Kannel Doors, with previous styles of hardware, in use for more than a third of a century.

The simplicity of design and operation makes the Type "AA" door easy to collapse or fold and just as easy to re-set into operating position. When re-setting, the spring socket quickly and automatically lines up the wings. The absence of braces, cables or chains between the wings facilitates handling, provides more room between the wings, and makes possible a neat, modernistic design.

When equipped with the Traffic Adapter, which assures operation at a comfortable, convenient rate of movement without excessive speeds or spinning, this modern revolving door provides any entrance with . . . *great capacity* . . . *freedom of movement* . . . *absolute safety.*

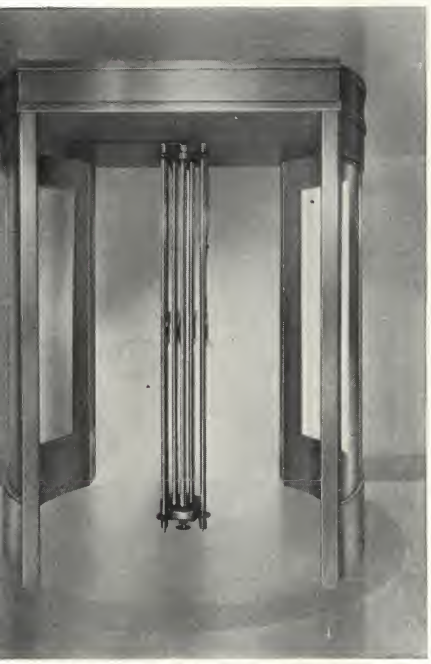


Fig. 4: *With Four Wings Collapsed Together The Panic-proof Position*

Fig. 1: *In Half-Collapsed Position*

Only three seconds are required to place one wing of a Type "AA" door in half collapsed position shown and to re-set it into operating position for regular use. With one wing in this position long objects or other equipment are readily passed through.

Fig. 2: *In Folded Center Position*

Type "AA" doors can be folded without effort by manually releasing the tension on wings. The secondary engagement in the discs holds the wings in folded position until released. To restore wings to operating position they need only be moved back into place and tension re-applied. The wings of this modern door can be folded to the position shown in thirty seconds and re-set, ready for use, in even shorter time.

Fig. 3: *With Wings Folded and Rolled to One Side*

In this position, Type "AA" doors provide a clear opening through the entrance for ventilation, movement of furniture, equipment, etc. When wings are folded, they are held firmly in place by the secondary engagement assuring easy, balanced handling. Wings can be folded and moved to one side of the enclosure in thirty seconds and, as quickly, can be re-set in the center ready for regular use.

Fig. 4: *With Four Wings Collapsed Together • The Panic-proof Position*

In case of a panic, a crowd rushing and pressing against wings of the Type "AA" door would cause them to collapse, *automatically* and *instantly* to the position shown in Fig. 4. Thus a clear, unobstructed passage is quickly provided on both sides of the center post. From this collapsed position the door can be re-set for regular use within six seconds.

Fig. 1: *In Half Collapsed Position*

Fig. 2: *In Folded Center Position*

Fig. 3: *Wings Folded and Rolled to One Side*

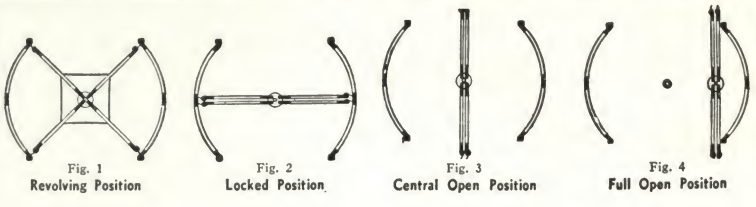
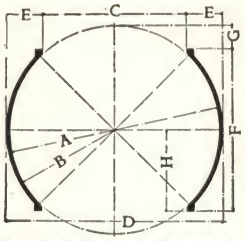


Fig. 1 Revolving Position — Fig. 2 Locked Position — Fig. 3 Central Open Position — Fig. 4 Full Open Position

Fig. 5 Panic Collapsed Position — Fig. 6. Full Open Position with Wings Collapsed — Fig. 7 Full Open Position with Flexed Walls — Fig. 8 Panic Collapsed Position with Flexed Walls

Positions assumed by the wings of VAN KANNEL REVOLVING DOORS



Dimension Diagram

Descriptive Data

Panic Proof Type Wings — Thickness, 1¼ in., wood; 1 to 1¼ in., metal.

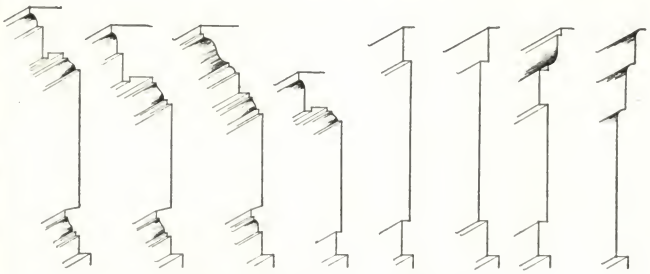
Door Vestibules—5 ft. 6 in. to 8 ft. diam., 4 wings.

Normal Diameter Vestibule—6 ft. 6 in.

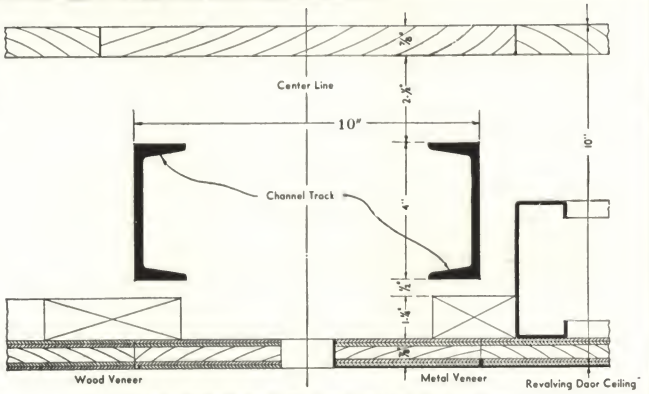
DIMENSIONS — FT.-IN.

A	B	C	D	E	F	G	H
5- 6	2- 9	3- 9	5-8¾	0-11⅞	4- 2½	7¾	2- 1¼
5-10	2-11	3-11½	6-1	1- 0⅜	4- 7¼	7⅜	2- 3⅝
6- 0	3- 0	4- 1	6-3	1- 1	4- 8½	7¾	2- 4¼
6- 2	3- 1	4- 2½	6-5	1- 1¼	4-10	8	2- 5
6- 4	3- 2	4- 4	6-7	1- 1½	4-11½	9	2- 5¾
6- 6	3- 3	4- 5¼	6-9	1- 1⅞	5- 0¾	8⅝	2- 6⅜
6-10	3- 5	4- 8	7-1	1- 2½	5- 3½	9¼	2- 7¾
7- 0	3- 6	4- 9½	7-3	1- 2¾	5- 5	9½	2- 8½
7- 2	3- 7	4-10¾	7-5	1- 3⅛	5- 6½	9¾	2- 9¼
7- 6	3- 9	5- 1½	7-9	1- 3¾	5- 9¼	10⅜	2-10⅝
7-10	3-11	5- 4¼	8-1	1- 4⅝	6- 0	11	3- 0
8- 0	4- 0	5- 5¾	8-3	1- 4⅝	6- 1½	11¼	3- 0¾

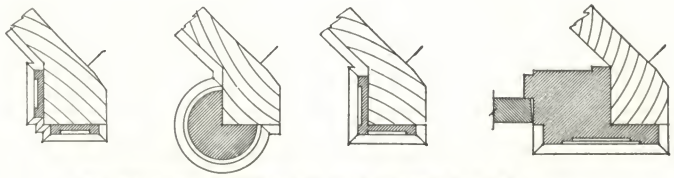
VAN KANNEL REVOLVING DOORS



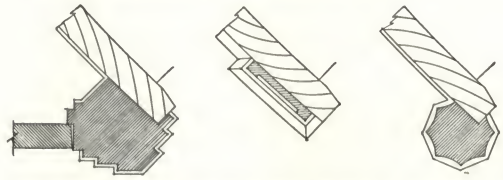
SILHOUETTES SHOWING CORNICE DESIGNS
Available with Designs No. 3 or No. 3-G



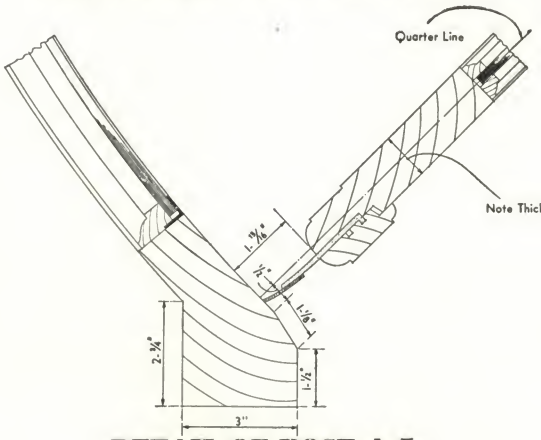
OVERHEAD CLEARANCES



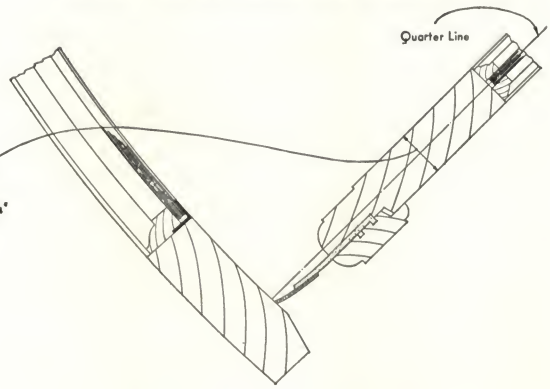
MODIFICATIONS OF POST A-5



MODIFICATIONS OF POST A-9

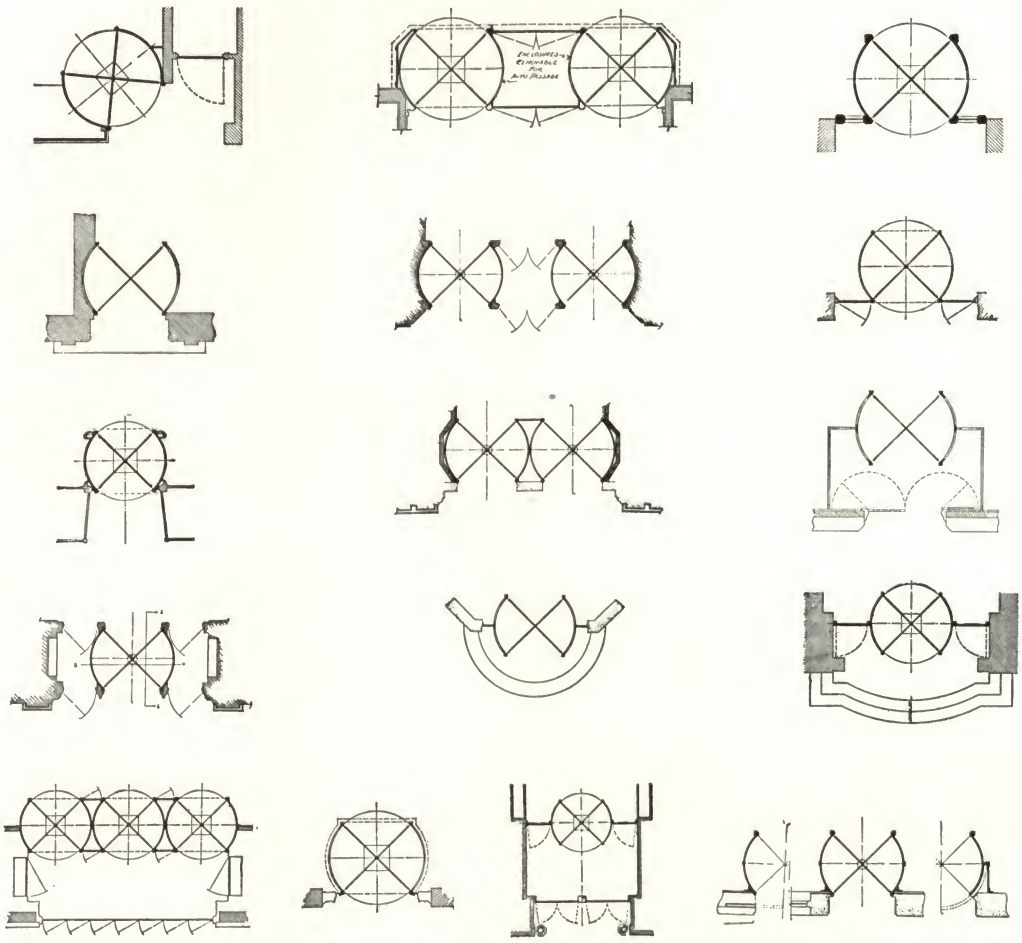


DETAIL OF POST A-5
Standard Design



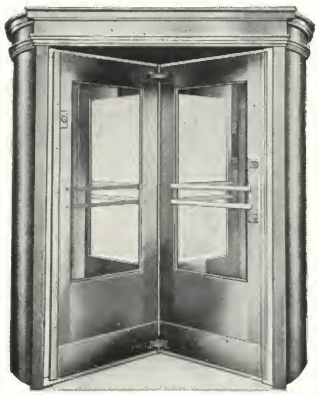
DETAIL OF POST A-9
Standard Design

Suggested Applications of
VAN KANNEL REVOLVING DOORS
to Various Entrances



Type AA, Design 1
Material—Any metal or wood.

Type AA, Design 1G
Material—Any metal or wood.

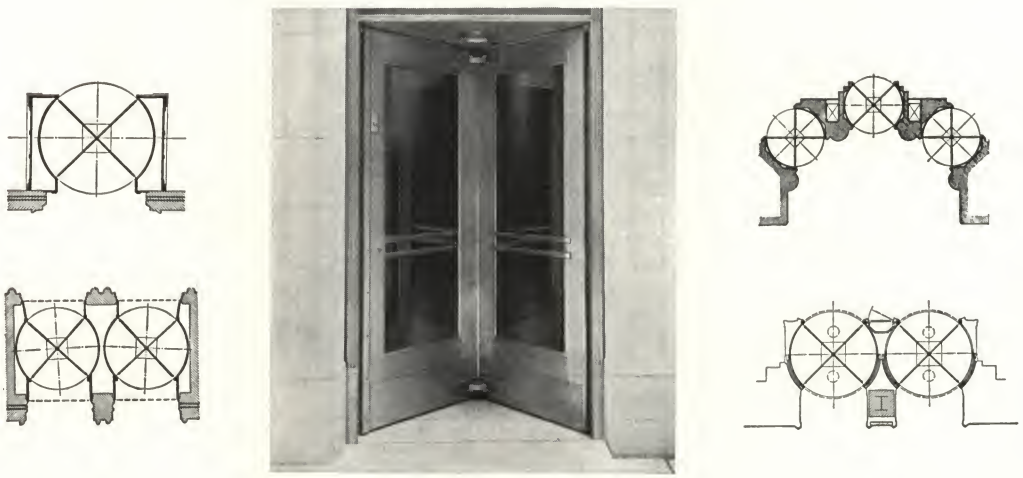


Type AA, Design 3
Material—Any metal or wood.

Type AA, Design 3G
Material—Any metal or wood.

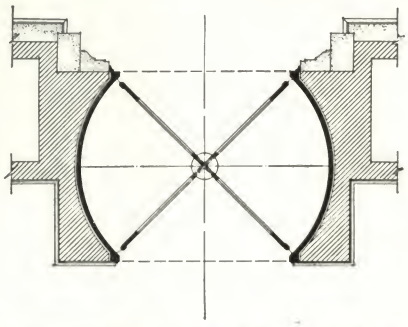
Typical Installations of Design U

Walls and ceiling unfinished on convex side. No cornices or roof. Commonly used when desired to enclose revolving door in housing to carry out any particular architectural motive.

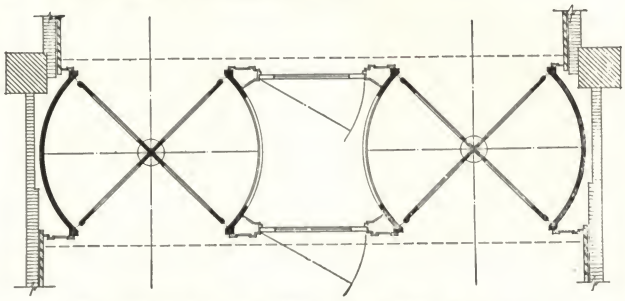


Type AA—Design U

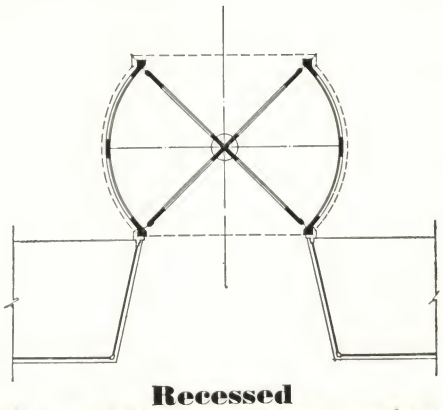
VAN KANNEL REVOLVING DOORS



Masonry Opening Entrance



Ornamental Bronze Entrance



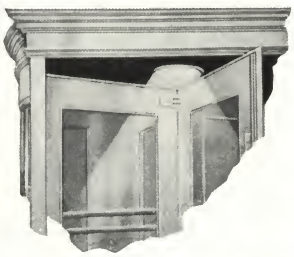
Recessed Show Window Construction

Corner Show Window Construction

TYPICAL CONNECTIONS TO OTHER WORK

SPECIAL VAN KANNEL EQUIPMENT

Ceiling Lights



Ceiling Light Reflectors, with or without flush obscure glass cover, can be furnished and installed where needed with solid wall enclosure. These lights are normally 10 inches in diameter, and are usually located in the interior and exterior quarters, half way between the center and the edge of the ceiling.

Cylinder Locks

Cylinder locks are available for all Van Kannel Doors where specified. Two locks are required, one each on opposite wings.

Automatic Burglar Lock

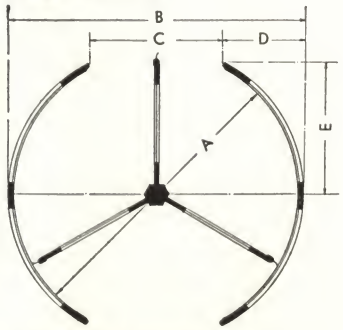
The Van Kannel Electric Burglar Lock provides instant locking for the revolving door from one of as many stations as may be desired throughout the banking quarters. It is a gravity lock, electrically controlled. Two locks are located on the quarter line in the ceiling of the revolving door enclosure. They may be actuated from any part of the building, through as many stations as desired, insuring the instantaneous locking of the door in any emergency.

Flexed Walls

Flexed walls, used for maximum entrance widths, permit passage of automobiles for display, as in hotel lobbies or exhibition halls. *(See page 10.)*

Three Wing Doors

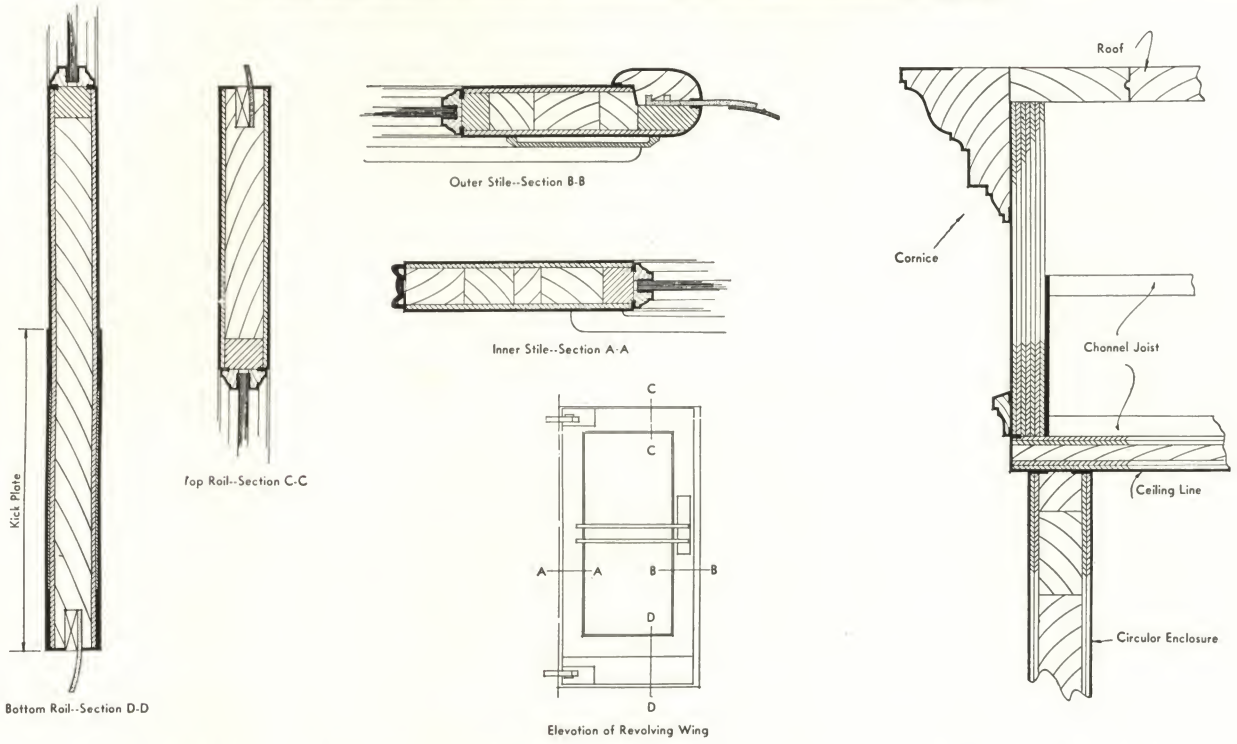
Three-wing doors provide an effective seal against drafts or odors, and a low cost revolving door where space is limited and traffic is not heavy. Capacity of the three-wing door is equivalent to a single swing door. They are suitable for entrances to toilet rooms and photographic or X-Ray rooms, etc. *(Further details on request.)*



DIMENSIONS OF THREE WING DOORS

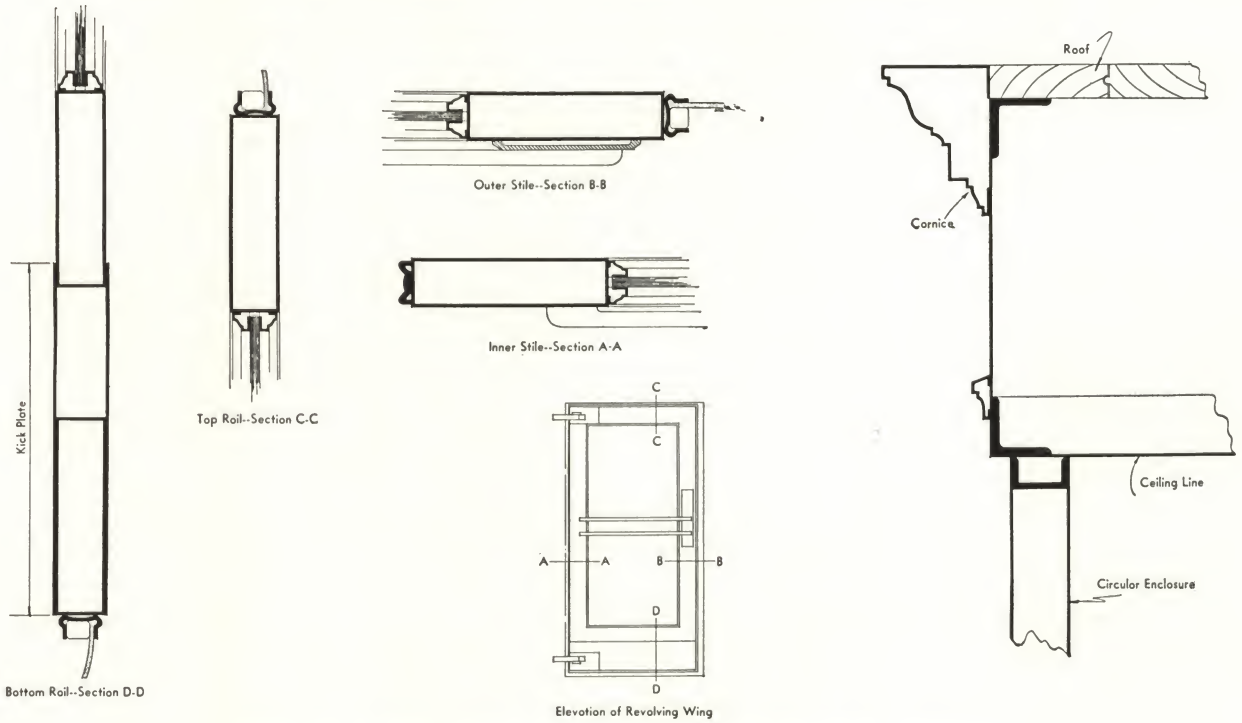
No.	A	B	C	D	E
1	4′– 8″	4′–11″	2′–1 3/4″	1′–4 5/8″	2′–2 1/4″
2	4′–10″	5′– 1″	2′–2 3/4″	1′–5 1/8″	2′–3 1/8″
3	5′– 0″	5′– 3″	2′–3 3/4″	1′–5 5/8″	2′–4″
4	5′– 2″	5′– 5″	2′–4 3/4″	1′–6 1/8″	2′–4 7/8″
10	.....	.....	.....	.....	.....

VAN KANNEL REVOLVING DOORS



DETAILS OF CONSTRUCTION — METAL VENEER OVER WOOD CORE

VAN KANNEL REVOLVING DOORS



DETAILS OF CONSTRUCTION — HOLLOW METAL

Specifications for VAN KANNEL REVOLVING DOORS

STANDARD DESIGNS

Type AA, Standard Design No. 8
Material—Birch. Size 6 ft. 6 in. x 6 ft. 11 in.

Type AA, Standard Design No. 7
Material—Birch. Size 7x7 ft.

Economy Chief
6'6"x6'10"
Economy Junior
5'6"x6'10"
Material—Gumwood

Revolving Doors

Revolving door contractors shall furnish and install where specified and shown on plans VAN KANNEL REVOLVING DOORS, TYPE AA and design (*see page 11*) built of (material) to be fully automatic collapsible, panic-proof type, equipped with traffic adapter as hereinafter described. Revolving door contractors shall include circular enclosure, flat ceiling, cornice, revolving wings, hardware, glass and complete mechanism, including traffic adapter.

Mechanism

The mechanism of the revolving door shall be so constructed that the four wings will fold from their revolving position to a wide open panic position instantly when a force somewhat greater than that necessary to revolve the wings is exerted on any two wings. The tension holding the wings in their radial position shall be adjustable to a collapsing pressure of from 60 to 175 pounds when applied at a point 42 in. from the floor on the outer stile of the wing. The mechanism shall also permit the wings to be folded manually in a central position in pairs; in a full open side position in pairs; in a central panic position with the four wings folded like a book.

The wings of the revolving door shall be hung independently of each other by hangers pivoted to the center discs at both the top and bottom of each wing. Each wing shall be held in normal rotating position by self-centering spring engagements contained in the discs and top and bottom hangers—no brace arms, chains or cables between the wings will be permitted. Provision shall be made for adjusting the collapsing tension quickly without disassembling any hardware or fixtures. A simple manual release of the tension holding the wings in radial position shall be provided to permit collapsing or folding of the wings without exerting the pressure needed for automatic collapsing.

A stop shall be provided in one hanger on each wing so that when the collapsing tension is released, the wings when folded in pairs will be held in folded position without the use of separate folding bars.

The center shaft carrying the wings shall be supported overhead in a universal ball bearing mounting carried on a four-wheel trolley which in turn is set on a self-supporting steel track, to permit the wings to be moved to the side of the enclosure when folded. This center shaft shall be held in position by a locking device in the overhead track and by a socket in the floor. The bottom pivot is not to rotate in the floor socket. The raising of the bottom pivot is to release the center shaft at both the top and bottom, freeing it for movement to the side of the enclosure.

Hardware

The hardware shall include keylocks (state if master-keying required), kick plates, push bars and push plates made of (kind of metal).

Glass

All glass in the revolving wings and enclosures shall be ¼ in. American polished plate.

Ceiling Lights

Two flush ceiling lights shall be furnished including reflectors and removable glass covers, but not including any electric fixtures—fixtures and wiring to be included under electrical contract.

Traffic Adapter

The speed of rotation of the revolving door shall be controlled by a mechanical traffic adapter to be installed in the overhead mechanism. This device shall permit free rotation of the revolving wings up to any predetermined rate of speed, but shall prevent spinning or excessive speed at all times. An adjustment shall be provided to limit the maximum speed to meet the traffic needs of the entrance.

Construction of Wings and Enclosures

For Wood Doors—Wings and enclosures shall be finished in (kind of wood) veneer applied over laminated wood cores properly constructed for the purpose. Finish veneer shall not be less than ⅛ in. thick. All finished surfaces of the wood shall be hand scraped and hand sanded to a perfect finish. Wood surfaces exposed on the finished work shall be given a finish of stain, shellac and three coats of spar varnish. The final coat of varnish shall be rubbed to a dull finish and wiped clean.

For Metal Doors—(*Metal overlay on wood cores*) Wings and enclosures are to be finished in (gauge) (kind of metal) overlay on laminated wood cores—not kalamein. (Note: Recommend not less than 20 gauge bronze on wood core and not less than 16 gauge aluminum on wood core.) All joints in metal surfaces shall be battened, riveted and calked so as to be invisible on the finished surface. All mouldings, formed members and edges shall be sharp and clean. All finished surfaces shall be filed, emeried and pumiced to a smooth surface and properly treated to match finish desired.

For Hollow Metal Doors—Wings and enclosures shall be built of (gauge) (kind of metal) on steel frame. (*Note: Recommend not less than 16 gauge bronze or 12 gauge aluminum.*) Walls and ceilings shall be built up on a metal frame. Wings shall be built of rectangular seamless tubing with reinforcements at hangers. All mouldings, formed members and edges shall be sharp, square and clean. All finished surfaces shall be filed, emeried and pumiced to a smooth surface and properly treated to match finish desired.

VAN KANNEL
ALWAYS OPEN
ALWAYS CLOSED
REVOLVING DOOR ©

Penobscot Building, Detroit

"Always Open"

Childs Restaurant
Broadway at 44th Street
New York

Telephone Building
Denver

Munson Steamship Line Building
New York

"Always Closed"

A Few Installations of
● VAN KANNEL REVOLVING DOORS

Home Savings Bank, Albany, N. Y.
Atlanta Biltmore Hotel, Atlanta, Ga.
Lord Baltimore Hotel, Baltimore, Md.
Baltimore Trust Building, Baltimore, Md.
Filene's, Boston, Mass.
Jordan Marsh Company, Boston, Mass.
National Shawmut Bank, Boston, Mass.
First National Bank, Boston, Mass.
Buffalo Savings Bank, Buffalo, N. Y.
City Hall, Buffalo, N. Y.
Liberty Bank, Buffalo, N. Y.
A. Victor & Company, Buffalo, N. Y.
Kanawka National Bank, Charleston, W. Va.
Hotel Charlotte, Charlotte, N. C.
Field Building, Chicago, Ill.
Chicago Board of Trade, Chicago, Ill.
Marshall Field & Company, Chicago, Ill.
The Fair Store, Chicago, Ill.
The Palmer House, Chicago, Ill.
City National Bank & Trust, Columbus, Ohio
American Building and Loan, Dayton, Ohio
Third National Bank, Dayton, Ohio
Johnston-Shelton Company, Dayton, Ohio
Post Publishing Co., Denver, Colo.
First National Bank, Denver, Colo.
Federal Reserve Bank, Dallas, Tex.
Tiche Goettinger Company, Dallas, Tex.
Adolphus Hotel, Dallas, Texas.
J. L. Hudson Company, Detroit, Mich.
Penobscot Building, Detroit, Mich.
Book Cadillac Hotel, Detroit, Mich.
South Office Building, Harrisburg, Pa.
Robert E. Lee Hotel, Jackson, Miss.
Hotel Mason, Jacksonville, Fla.
Brown Hotel, Louisville, Ky.
First National Bank, Louisville, Ky.
Crutcher & Starks, Louisville, Ky.
First Wisconsin National Bank, Milwaukee, Wis.
Milwaukee County Court House, Milwaukee, Wis.
J. C. Penney Company, Milwaukee, Wis.
Roosevelt Hotel, New Orleans, La.
Maison Blanche, New Orleans, La.
R. H. Macy & Company, New York, N. Y.
Gimbel Brothers, New York, N. Y.
Empire State Building, New York, N. Y.
Chrysler Building, New York, N. Y.
Rockefeller Center, Inc., New York, N. Y.
Bankers Trust Building, New York, N. Y.
Chase National Bank, New York, N. Y.
Roosevelt Hotel, New York, N. Y.
Biltmore Hotel, New York, N. Y.
Farragut Hotel, Knoxville, Tenn.
Cotton Exchange Building, Memphis, Tenn.
Gimbel Brothers, Philadelphia, Pa.
John Wanamaker, Philadelphia, Pa.
Philadelphia Savings Fund Society, Philadelphia, Pa.
Fidelity Philadelphia Trust Building, Philadelphia, Pa.
U. S. Post Office, Pittsburgh, Pa.
Gulf Refining Company, Pittsburgh, Pa.
William Penn Hotel, Pittsburgh, Pa.
Union Trust Company, Pittsburgh, Pa.
Oliver Building, Pittsburgh, Pa.
Joseph Horne Company, Pittsburgh, Pa.
C. & P. Telephone Building, Richmond, Va.
Federal Reserve Bank, Richmond, Va.
Hotel Richmond, Richmond, Va.
Boatmen's Bank, St. Louis, Mo.
Hotel Jefferson, St. Louis, Mo.
Federal Court & Custom House, St. Louis, Mo.
Famous-Barr Dry Goods Company, St. Louis, Mo.
First National Bank, St. Paul, Minn.
Minnesota State Office Bldg., St. Paul, Minn.
U. S. Post Office, St. Paul, Minn.
Montgomery Ward & Company, St. Paul, Minn.
U. S. Capitol, Washington, D. C.
Library of Congress, Washington, D. C.
U. S. Treasury, Washington, D. C.
Hotel Willard, Washington, D. C.
Woodward and Lothrop, Washington, D. C.
Senate Office Building, Washington, D. C

. . . . . ***and Thousands of Others***

Baker Building
Minneapolis

Hotel Roosevelt
New York

VAN KANNEL REPRESENTATIVES

ALBANY, N. Y., 110 Wall St., Schnectady—*No. 4-8715*
ATLANTA, GA., Red Rock Building
BALTIMORE, MD., 514 St. Paul Place—*Vernon 6003*
BOSTON, MASS., 1042 Little Building—*Hancock 9360*
BUFFALO, N. Y., 519 Jackson Building—*Lafayette 8337*
BUTTE, MONT., 51 East Broadway—*No. 3869*
CANTON, OHIO, 715 Short Avenue—*No. 2-9755*
CEDAR RAPIDS, IOWA, 703 Security Building—*No. 2-6617*
CHARLESTON, W. VA., 1114 Lee Street—*No. 34-304*
CHATTANOOGA, TENN., 821 E. 11th Street—*No. 6-2763*
CHICAGO, ILL., 1514 Tribune Tower—*Superior 0330*
CINCINNATI, OHIO, 209 E. 6th Street—*Cherry 7600*
CLEVELAND, OHIO, 9105 Woodland Avenue—*Cedar 4020*
COLUMBIA, S. C., 601 Butler Avenue
COLUMBUS, OHIO, 1535 Menlo Place—*Eve. 6539*
DALLAS, TEX., Burt Building—*No. 2-3902*
DAYTON, OHIO, 494 Ludlow Arcade—*Fulton 4107*
DENVER, COLO., 812 Twelfth Street—*Main 3637*
DES MOINES, IOWA, 1418 34th Street—*No. 5-5047*
DETROIT, MICH., 250 W. Lafayette Boulevard—*Cadillac 3536*
DUBUQUE, IOWA, Federal Bank Building—*No. 1200*
EL PASO, TEX., Neff Stiles Company
ERIE, PA., 11 W. 11th Street
FARGO, N. D., 217 Broadway—*No. 4350*
FORT WAYNE, IND., Taylor Street and Lake Erie Ry.—*No. A-7492*
HAMILTON, ONT., CANADA, 59 Hillyard Street
HARRISBURG, PA., 18th and Mulberry Streets—*No. 3-5400*
HARTFORD, CONN., P. O. Box 107, W. Hartford
INDIANAPOLIS, IND., 115 E. Vermont Street—*Riley 6456*
JACKSONVILLE, FLA., 2716 Main Street—*No. 5-3047*
KNOXVILLE, TENN., 712 So. Gay Street—*No. 2-5727*
LOS ANGELES, CAL., 2071 Laura Avenue, Huntington Park—*Je. 7148*
LOUISVILLE, KY., 1446 Levering Street—*Magnolia 7480*
MEMPHIS, TENN., 202 Falls Building—*No. 8-3472*
MIAMI, FLA., 925 Lincoln Road
MINNEAPOLIS, MINN., 786 Eustis Street, St. Paul—*Nestor 5958*
NEW ORLEANS, LA., 937 Gravier Street—*Main 4488*
NORFOLK, VA., Citizens Bank Building
PHILADELPHIA, PA., 12 So. 12th Street—*Walnut 4850*
PHOENIX, ARIZ., P. O. Box 145—*No. 35008*
PITTSBURGH, PA., 1052 Century Building—*Atlantic 8790*
PORTLAND, ORE., 2221 Albina Avenue—*No. Walnut 7550*
RICHMOND, VA., 511 Atlantic Life Building—*No. 3-5712*
ROANOKE, VA., State and City Bank Building—*2-2298*
ROCHESTER, N. Y., 135 Spring Street—*Main 6406*
ST. LOUIS, MO., 927 Century Building—*Chestnut 0866*
ST. PAUL, MINN., 786 Eustis Street—*Nestor 5958*
SALT LAKE CITY, UTAH, 204 Dooly Building—*Wasatch 1680*
SAN FRANCISCO, CAL., 55 New Montgomery Street—*Douglas 7899*
SCHENECTADY, N. Y., 110 Wall Street—*No. 4-8715*
SEATTLE, WASH., 216-17 Walker Building—*Main 7950*
SHREVEPORT, LA., 310 Ricou-Brester Building
SIOUX CITY, IOWA, 1st Street and Nebraska Avenue—*No. 8-4595*
SIOUX FALLS, S. D., 213 Paulton Building—*No. 368-W*
PORTLAND, ME., 53 Pennsylvania Avenue
SYRACUSE, N. Y., 938 University Block—*No. 2-9621*
TERRE HAUTE, IND., 125 So. 7th Street—*Crawford 5575*
TOKIO, JAPAN, Marunouchi
WASHINGTON, D. C., 1427 Eye Street N. W.—*Met. 6856*
WINNIPEG, CAN., 120 Lombard Street—*No. 44140*

●

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DOORS · · METAL AND WOOD
- SECTION - 10

CATALOGS *30 to 36*

WOOD

CURTIS COMPANIES SERVICE BUREAU

CLINTON, IOWA

For Affiliated Companies and Listed Products See Our Pages in Window Section
For Windows, Trim and Kitchen Units, see File Index

CURTIS DOORS AND WOODWORK

1866 CURTIS WOODWORK

Good taste, architectural authenticity, quality construction, and availability, these are the qualities which for years have commended Curtis Doors and Woodwork to architects.

For virtually all Curtis Woodwork is architect designed. Many details in the Curtis line came from the drawing boards of architects of established reputation. And there is Curtis Woodwork for every architectural need. A wide range of styles are included—from the simplest and most inexpensive designs to the faithful reproductions of traditional styles suitable for the finest residences.

All Curtis Woodwork is trade-marked and guaranteed against manufacturing defects. It is available through leading lumber dealers in most cities east of the Rockies, and is always available for prompt delivery from our several large mills.

Shown here are but a few selections from the Curtis line of quality woodwork. They may suggest the excellence of Curtis design and the breadth of the Curtis line. For further information, please ask for our complete Detail Sheets showing construction and dimensions of each member of every piece. These sheets have been prepared by architects in the accepted ¾-inch scale to make them usable with a minimum of effort in the drafting room. Inserted under tracing paper or cloth, the details may be rapidly traced on your drawings.

A—All of the artistic advantages of a handmade door but with the economy of Curtis standardized construction. The Curtis line includes many models for English and Spanish architecture.

B—One of the many Colonial entrances in the Curtis line. This one, authentic in every detail, is equally pleasing in masonry, brick, or wide siding. There are a number of Curtis entrance doors which harmonize with this entrance.

C—For the English or Mediterranean house, Curtis has developed a number of pleasing and substantial interior doors that harmonize beautifully with paneled walls or wainscoting.

D—One of the most popular of Curtis interior doors. A six-panel of traditional design suitable for many styles of homes. Extra thick panels give this door a substantial appearance that suggests a price far higher than that made possible by Curtis standardization.

E—Straight from a Colonial original comes the design for this Curtis china cabinet. Note the graceful pilasters and the refinement of trim. There are Curtis units for the formal dining room and for the cozy dinette—all offering the economies of standardized construction.

F—Curtis design makes these mantels beautiful enough to be the heart of any home. A considerable variation is included in the Curtis line of which we here show only two examples—a Colonial and an English type. Both are reasonable in price, yet are architecturally correct and are built to withstand wide temperature changes without warping or separation of joints.

G—A stairway. Curtis has endeavored in all of its woodwork to evolve patterns which look as though they had been specially designed for each installation. Hence architects, specifying Curtis Woodwork, need never feel that they are making any sacrifices of authenticity or of good taste. And there's a Curtis design for every architectural need.

ESTABLISHED 1886

W. D. CROOKS & SONS

For a Half Century Manufacturers of Hardwood Veneered Doors

GENERAL OFFICE AND MILLS
WILLIAMSPORT, PA.

Products

HARDWOOD VENEERED DOORS of every description to architects' specifications and details.
FLUSH DOORS; STOCK DOORS of all designs.
FOLDING PARTITION (ACCORDION) DOORS.
CROOKS' LEAD CENTER X-RAY DOORS.

CROOKS 1886 DOORS
TRADE-MARK

Policy

Limited Quantity—Unlimited Quality.
For fifty years a limited output has been the policy of this organization. The company's heads believe this the only possible means of maintaining its standard on custom-built doors to architects' details, which constitute the bulk of its output.
No new door manufacturing equipment, no modern machine, which we approve, is lacking in the Crooks plant. In labor, in equipment, in materials, the company tolerates only the best.

Guarantee

W. D. CROOKS & SONS guarantee to replace in the white any Crooks door which proves defective due to material or workmanship. We expect the usual care to protect doors from moisture absorption. Trade-mark stamped on each door.

CONSTRUCTION DATA AND SUGGESTIONS

Construction

Crooks doors are veneered with any foreign or domestic wood specified. All veneer is shrunk in re-drying machines.
Core is "built-up" of narrow chestnut or white pine, kiln-dried strips, which are glued together and kept in retainers in hot rooms until perfect joints are assured. Core is then planed to even thickness and veneers applied under hydraulic pressure. Material is again held in retainers in hot rooms until all moisture is eliminated from the glue.
Succeeding operations are practically identical in all factories, the only difference being in the skill with which the work is performed.

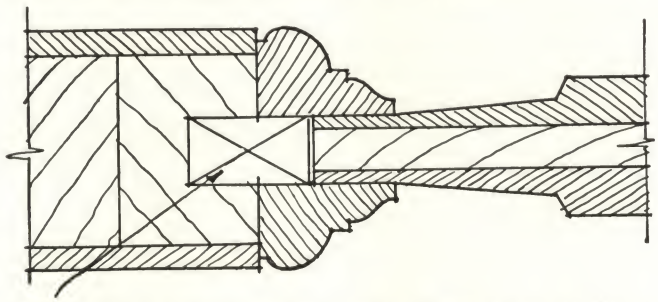
General Specifications

A set of specification sheets covering the best method of construction for all types and designs of veneered doors will be mailed upon request.

Construction Suggestions

The information given in the following suggestions for special doors is of a practical nature and should be of value to the specification writer.
Use *sawed* veneers on cores of kiln-dried, soft wood strips.
Exterior doors, as well as all heavy duty doors, such as schoolhouse and church doors, should be detailed mortise and tenon construction.
Doors with flush or raised moulding should be mortised and tenoned.
Detail one-panel doors not less than 1¾ in. thick, with panel not less than ½ in. thick.
Doors veneered with two kinds of wood should be at least 1¾ in. thick.
Doors over 2 ft. 8 in. wide or 7 ft. high should be made 1¾ in. thick.
Flush (sanitary) doors should be detailed at least 1¾ in. thick.
Solid stuck mould should not be detailed wider than ¾ in.
Bars in sash doors should be at least ¼ in. not to exceed ½ in. between glass.
All panels, both flat and raised, should be laminated.
Specify waterproof glue and standard ¼-in. *sawed* veneers on all exterior doors.
Always specify hand sanding when expensive foreign or domestic woods are used. The results far exceed the added cost.
Flush (sanitary) doors should be hand cleaned.

The detail below shows construction commonly used even for the better class of door work. Why it is impractical and how W. D. Crooks & Sons improve on its use will be gladly explained on request.



NOTE: This is poor construction. We will explain why at the request of any architect.

CROOKS NON-WARPING FLUSH DOOR

In making flush doors our standard construction (specifications below) we believe that *framing* the core door five cross panel fashion insures strength and prevents warping. The ¼-in. *sawed* face veneer permits selection and matching for figure, and is the only certain assurance of eliminating checking, blistering and sunken faces.

Specifications for Crooks Non-warping Flush Door

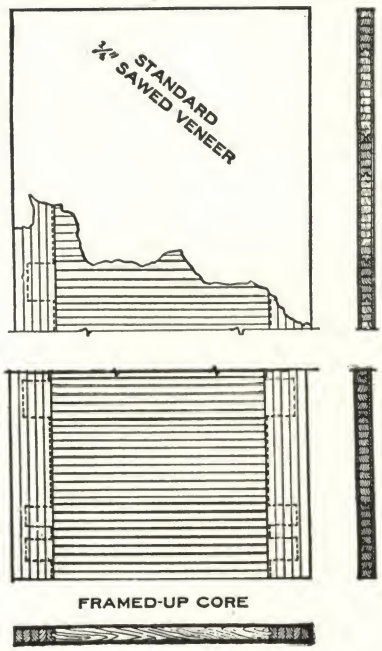
Flush Doors to be Crooks Non-warping Construction as manufactured by W. D. CROOKS & SONS, of Williamsport, Pa.

Core—To be chestnut or white pine, to contain not more than 5% moisture. Stile core to be built up of strips not more than 1⅜ in. by thickness of core, rails and panels to be built up of pieces not over 3 in. wide, glued with waterproof glue under heavy pressure.

Frame—Core of stiles, rails and panels to be *framed* to make five cross panel flush surface. All members well glued and door assembled under heavy pressure.

Core Door—Core of door to be sanded smooth, ready for face veneer.

Face Veneer—Face veneer to be *sawed* (not rotary cut) standard ¼ in. thick, not less than $\frac{3}{16}$ in. when sanded, and to be matched book-leaf. All joints in face veneer to be parallel with edges of door and well glued. Edges same wood as face veneer and at least ¾ in. thick.



Gluing—Face veneer to be glued to core with waterproof glue under heavy hydraulic pressure and held in retainers until glue is set.

Redrying—Doors to be redried after veneering to remove all moisture contained in glue.

Sanding—Face of door to be sanded in such a manner that when varnish is applied, machine or sander marks will not show through finish.

Lead Center X-Ray Door

It is made similar to our Standard Non-warping Flush Door excepting two entirely separate cross banded core doors are made and sheet lead covering the full inner surface is placed between these sections, securing them together with bolts, washers and nuts. Bolts are countersunk and covered with lead plugs—all hidden by face veneer. The thickness of finished door should be not less than 1¾ in. Full specifications with detail mailed on request.

SPECIAL DOORS TO ARCHITECT'S DESIGNS

Our only claim is that we make good doors. But this claim we feel privileged to amplify with the statement that we believe we are equipped—with tools, with materials, with skilled labor, and executive ability—to faithfully interpret the special veneered door designs of the most exacting architects in America.

All architects are welcome to our services, as consultants, when difficult questions of construction arise, without fear of obligation; and on all other subjects relating to the manufacture of special hardwood veneered doors we gladly extend our facilities.

Sample (Special) Doors

The company welcomes the opportunity to submit full size sample doors at actual cost. This suggestion has found favor with architects on large buildings.

A FEW PROMINENT CROOKS DOOR INSTALLATIONS

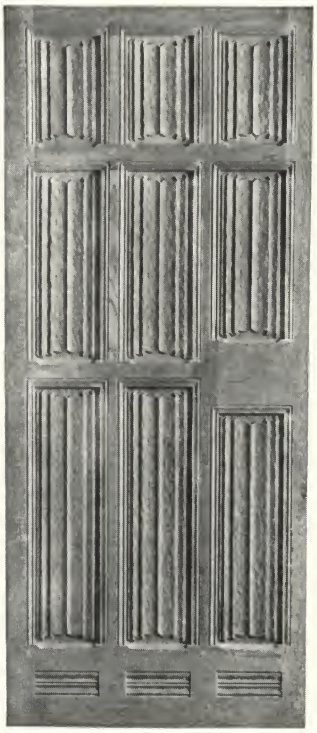
Outstanding Buildings Equipped Back Through the Years

House and Senate Chambers of U. S. Capitol, Washington, D. C.
Pennsylvania State Capitol, Harrisburg, Pa.
West Virginia State Capitol, Charleston, W. Va.
Delaware State Capitol, Dover, Del.
Office Building (Durant) General Motors Corp., Detroit, Mich.
John D. Rockefeller Residence, Pocantico Hills, N. Y.
Mayflower Hotel, Washington, D. C.
Convention Hall, Atlantic City, N. J.
Berkeley College, Yale University, New Haven, Conn.
Yale Graduate School, Yale University, New Haven, Conn.
Home Economics Building, Cornell University, Ithaca, N. Y.
Dormitories, Quadrangle I and IX, Yale University
Eugene duPont Residence, Centerville, Del.
Phillips Academy Buildings, Andover, Mass.
Union League Club, Philadelphia, Pa.
Detroit-Leland Hotel, Detroit, Mich.
Gulf Refining Co., Research Laboratory Bldgs., Harmarville, Pa.
Philadelphia General Hospital, Philadelphia, Pa.
Architects Building, Philadelphia, Pa.
Auditorium and Chapel, Mattewan State Hospital, Beacon, N. Y.
Union Medical College (Rockefeller Foundation), Peking, China
Girard College Buildings, Philadelphia, Pa.
Pennsylvania State College (9 Buildings), State College, Pa.
Union Industrial Building, Flint, Mich.
First Presbyterian Church, Pittsburgh, Pa.
Banco de Bogota, Colombia, South America
Senior High School and 10 Grade Schools, Philadelphia, Pa.
Princeton College Buildings, Princeton, N. J.
Utica State Hospital (7 Buildings), Utica, N. Y.

Recent Installations

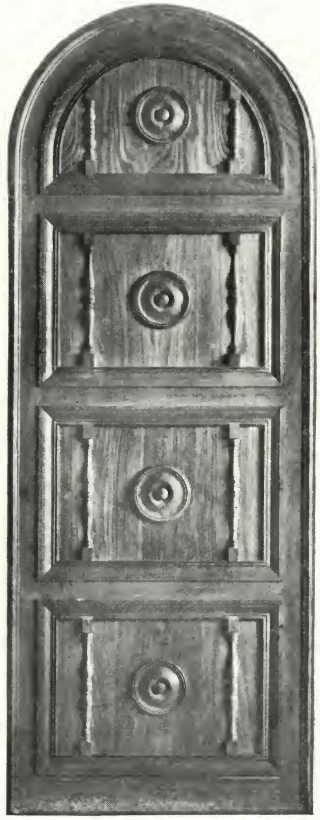
Building	Architect
The Saratoga Spa Group (6 Buildings), Saratoga Springs, N. Y.	Zantzinger, Borie & Medary
U. S. Department of Justice Building, Washington, D. C.	John Russell Pope
Payne Whitney Gymnasium, Yale University, New Haven, Conn.	James Gamble Rogers
Sterling Memorial Library, Yale University, New Haven, Conn.	James Gamble Rogers
Timothy Dwight College, Yale University, New Haven, Conn.	Horace Trumbauer
Duke University (10 Buildings), Durham, N. C.	Wm. E. Haugaard (State)
Wassaic State School Buildings, Wassaic, N. Y.	Charles Z. Klauder
Cathedral of Learning, University of Pittsburgh, Pittsburgh, Pa.	Anthony J. DePace
Holy Cross Church and Rectory, New Britain, Conn.	Nathan C. Wyeth (Municipal)
Woodrow Wilson Senior High School, Washington, D. C.	Cass Gilbert
Seaside Sanatorium Building, Waterford, Conn.	Maginnis & Walsh
Assembly Hall, Holy Cross College, Worcester, Mass.	David Adler
E. Marshall Field Residence, Syosset, N. Y.	

Knotty Oak Door Used in an Office Reception Room
Frank J. Forster and R. A. Gallimore, Architects



Payne Whitney Gymnasium, Yale University, New Haven, Conn.
Office of John Russell Pope, Architect

Administration Building, Board of Education, Philadelphia, Pa.
I. T. Cathrine, Architect



Artistic American Walnut Door on a Fine Residence, Paterson, N. J.
Henry Barrett Crosby, Architect

STANDARD DESIGNS AND STOCK DOORS

There is always a saving in cost of manufacture where a standard design can be used. Over 10,000 stock doors of standard designs in chestnut, birch, plain red oak, red gum and walnut are always on hand for immediate shipment. Twenty designs of red oak entrance doors are included. These are made with ¼-in. sawed veneer and waterproof glue.

HARDWOOD PRODUCTS CORPORATION

Manufacturers of Doors, Plywood and Millwork

MAIN OFFICE AND FACTORY

NEENAH, WISCONSIN

SALES OFFICES

NEW YORK, N. Y.
1021-101 Park Avenue
Telephone: Ashland 4-7594

CHICAGO, ILL.
2111 Morse Avenue
Telephone: Rogers Park 2754 or Fairfax 0242

SAN FRANCISCO, CAL.
3045 19th Street
Telephone: Valencia 2241

MILWAUKEE, WIS.
811 E. Mason Street
Telephone: Daly 5496

THE COMPANY—ITS FACILITIES

The Company

Located in the heart of the hardwood country, the company has been continuously in business for twenty-five (25) years, specializing in the manufacture of high quality hardwood-veneered and solid-softwood doors.

Guaranty

We Unqualifiedly Guarantee every HARDWOOD PRODUCTS CORPORATION *door, made according to our recommendations, to be free from defects of workmanship and materials, and will replace any doors that prove to be defective within the meaning of our specifications and recommendations.*

Responsibility

Our rating in R. G. Dun's and Bradstreet's is over $750,000—first grade of credit.

Facilities

The plant, equipped with the most modern, efficient door machinery, is one of the largest in the country devoted to the manufacture of high quality products. *Quality is never an accident but always the result of high intention, sincere effort, intelligent direction, and skilful execution.*

PRODUCTS

VENEERED DOORS (Panel)
FLUSH VENEERED DOORS
FIRE-RESISTANT WOOD DOORS
X-RAY or LEAD-LINED DOORS
*SOUND-PROOF DOORS
SOLID SOFTWOOD DOORS
PLYWOOD
MILLWORK

*We are exclusive manufacturers of Riverbank Sound Insulating Doors as designed along new and thoroughly scientific lines by the Riverbank Acoustical Laboratories, Geneva, Illinois. These are all wood surfaced inlaid flush doors veneered with any cabinet wood for stain or in plain birch for paint finish. For full details see File Index for Riverbank Insulating Door Company.

SPECIFICATIONS FOR HARDWOOD PRODUCTS CORPORATION'S SUPER-FLUSH DOOR

Recommended for Institutional and Other Higher Grade Flush Door Installations

Cores—The cores of flush doors shall be of white pine, and (except doors 1¼ in. or less in thickness) shall be built up of stiles and rails not less than 5 in. wide, except the top and bottom rails which shall be not less than 7 in. wide, exclusive of edge strips.

Doors 5 ft. or less in height shall have not less than one intermediate cross rail and doors more than 5 ft. in height shall have not less than two intermediate cross rails.

The stiles and rails shall be doweled together, using not less than two dowels at ends of each intermediate rail and not less than three dowels at end of each top or bottom rail. Dowels shall be of hardwood and not less than ½ in. in diameter.

The stiles and rails shall be plowed for panels. All cores shall be formed of strips not over 1½ in. wide by the full thickness of the core. The panel strips shall run vertically, shall be glued together and glued into the grooves of the stiles and rails.

Joints of pieced core in stiles, rails and panels shall be well scattered.

Doors 1¼ in. or less in thickness shall be of 5-ply construction with vertical cores throughout.

Crossband—The core shall have crossbanded veneers ⅛ in. thick, extending the full width of the door.

Veneers—Face veneers of interior flush doors shall be sawn and shall be not less than ⅛ in. thick before sanding. Veneers shall be book-matched and the edges glued together before application to the core. Face veneers of exterior doors shall be ¼ in. thick before sanding.

Face veneers of highly figured woods shall be of a thickness procurable in that wood, usually 1/20 or 1/28 in. thick.

Edge Strips—Edge strips shall be not less than ¾ in. thick and outer edge strips shall be of same wood as face veneers, unless otherwise specified. Outer vertical edge strips shall be the full length of the door.

Glue—Glue shall be aircraft water resistant glue, complying with requirements of U. S. Navy Specification No. 52-G-8.

Sanding—Flush doors shall be thoroughly belt sanded and no cross sander marks shall appear.

Re-Drying—Doors are to be re-dried after veneering to remove all moisture contained in the glue.

Testing—The right is reserved to use any door for the purpose of testing to determine whether materials and workmanship fulfill the requirements of the specifications.

General Notes: Do not specify flush doors less than 1¾ in. in thickness and avoid, wherever possible, specifying a door with different woods two sides, particularly where the tensile strength of both woods is unequal.

While sawn veneers are preferred by most architects, it is possible—where economy is necessary—to furnish rotary cut veneers, especially in the more common species as birch, plain oak and gum. In the event rotary cut veneer is acceptable, a further economy can be effected by the use of standard $\frac{1}{28}$-in. face veneers in the common species.

Walnut and mahogany are usually furnished in sawn or sliced veneers, the standard commercial thickness in these higher-priced species usually being 1/20 or 1/28 in. thick.

Where doors are subjected to unusual hard usage, such as insane asylums, etc., the use of standard ¼-in. veneers is recommended. In this case the crossbanding can be omitted and a five-cross panel stile and rail core construction is recommended.

A List of Recent HARDWOOD PRODUCTS CORPORATION *Door Installations Will Be Mailed on Request*

ESTABLISHED 1865

THE R. McMILLEN CO.

INCORPORATED 1902

Manufacturers of Hardwood Doors, Pine Doors, Sash and Millwork

OSHKOSH, WIS.

SALES OFFICES

NEW YORK, N. Y., 431 Marlborough Road, Yonkers, N. Y.
BIRMINGHAM, ALA., Comer Building—Phone: 3-9768
PHILADELPHIA, PA., 7117 Wayne Avenue, Upper Darby, Pa.—Phone: Boulevard 586
CHICAGO, ILL., 7942 Green Street—Phone: Vincennes 1810
BUFFALO, N. Y., 104 Linden Avenue—Phone: University 7230
DALLAS, TEX., P. O. Box 1161—Phone: 5-2093
CHARLOTTE, N. C., P. O. Box 846—Phone: 5891
ST. LOUIS, MO., 4533 Tower Grove Place—Phone: Prospect 6672

Products and Distribution

VENEERED DOORS of all kinds; PINE DOORS AND SASH; TRIM AND CABINET WORK. We specialize on HARDWOOD VENEERED DOORS. Our products are sold through independent jobbers, wholesale dealers and mills.

Resources and Facilities

A strictly modern plant, equipped with the best of machinery and manned by mechanics of proven skill. Our capacity is in excess of 1200 doors per day.

Our Guarantee

We unconditionally guarantee our product to be of first quality material, carefully seasoned and well manufactured. If made to our specification, we will replace any door or other product which, within two years, is shown to have been defective in either material or workmanship. We ask only the exercise of ordinary care in the storage and installation of our products.

Samples

On orders totalling 500 or more doors, if desired, a full size typical sample door will be furnished gratis for architects' approval before we manufacture the job. On smaller jobs, such sample may be had at actual cost. Sample corner sections, showing construction, gratis at all times.

Catalogs and Literature

A complete series of catalogs and brochures showing a full line of our products and details of construction may be had by writing our Oshkosh, Wisconsin, office. Also available are "Suggestions for the Proper Storage and Installation of Veneered Doors."

STANDARD SPECIFICATIONS FOR VENEERED DOORS

All doors shall be of size, thickness and design as called for on plans.

Interior Doors of Stile and Rail Type

These shall be constructed of thoroughly seasoned materials redried by door manufacturer before assembly to a proper and uniform moisture content suitable for the climate in which the doors are to be used. All core materials shall be of soft pine glued up of blocks not over 2 inches wide on the face and joints in adjacent rows of core well staggered. Unless otherwise stated, exposed edges shall have a ¾-inch thick strip of the same wood as the face veneer. Veneers for stiles and rails shall be ⅛ inch before sanding unless otherwise noted. All glue used in the door construction must be a high grade vegetable or water resistant casein glue, equally distributed over the surface and applied under pressure before "chilling." Panels shall be three or five-ply as noted. Joints shall be assembled with *hardwood* spiral groove dowels not less than ⅝x5 inches, joints 6 inches or less to have two dowels with an additional dowel for each additional 3 inches or fraction in width. All joints must be well fitted and all moulded edges smoothly machined. Unless otherwise noted, all doors shall be smoothly machine sanded with "00" sandpaper.

Interior Doors of Flush Type

These shall have cores constructed of vertical blocks not over 2 inches wide on the face, well glued together with joints well staggered and surrounded with ¾-inch hardwood edge strip on all four edges. All cores shall be of soft pine properly dried and seasoned as described above. Assembled core shall be brought to a uniform surface to which shall be applied a $\frac{1}{16}$-inch horizontal cross banding extending to edges of door and a $\frac{1}{16}$-inch before sanding (or a ⅛-inch before sanding if preferred by Architect) vertical face veneer. All glue shall be a high grade vegetable or water resistant casein product equally distributed and applied under pressure before "chilling." Unless otherwise noted all flush doors shall be smoothly machine sanded with "00" sandpaper.

Note: In lieu of above, Flush Doors may be made with cores of stile and rail construction, assembled with ⅝x5-inch spiral grooved *hardwood* dowels with cross banding concealed on vertical edges and face veneer not less than standard ⅛ inch thick before sanding.

Exterior Doors

These shall be made to the same specifications, except that veneers for stiles and rails and flush doors shall not be less than ¼ inch before sanding and shall be applied with a high-grade casein water-resistant glue.

The manufacturers' trade-mark or label shall appear on all doors. All doors shall be as manufactured by THE R. MCMILLEN CO., Oshkosh, Wisconsin, or other approved manufacturers.

A FEW RECENT AND REPRESENTATIVE INSTALLATIONS OF McMILLEN DOORS

(Architects' name upon request)

Beta Theta Pi Fraternity House, Hanover, N. H.
U. S. Marine Hospital, Baltimore, Md.
Northam Warren Residence, Garden City, L. I.
Colwyn Grade School, Colwyn, Pa.
New York State Hospital, Letchworth Village, N. Y.
Epileptic Hospital, Cambridge, Minn.
E. E. Reed Residence, Deer Isle, Me.
LaRabida Sanitarium, Jackson Park, Chicago, Ill.
Roosevelt Junior High School, Middletown, Ohio.
U. S. Post Office, Trenton, N. J.
U. S. Veterans' Hospital, Augusta, Ga.
Home for Confederate Women, Richmond, Va.
Guggenheim Airship Institute, Akron, Ohio.
Baptist Church, Lake Villa, Ark.
St. Barnabas School, Belmore, L. I., N. Y.
University of Texas (3 Buildings), Austin, Tex.
U. S. Post Office, Fort Worth, Tex.
U. S. Forest Products Laboratory, Madison, Wis.
Ocean Forest Hotel, Myrtle Beach, S. C.
Medical Arts Building, Birmingham, Ala.
U. S. Customs House, Denver, Colo.
Hotel Dempsey, Macon, Ga.
Recital Hall, State College, Bowling Green, Ohio.
Forrest General Hospital, Gadsden, Ala.
U. S. Botanic Gardens, Washington, D. C.
Model Home, Pittsburgh, Pa.
Temple University Hospital, Philadelphia, Pa.
Y. W. C. A. Building, New Haven, Conn.
University of Rochester, Rochester, N. Y.
Christ Church, Winnetka, Ill.
U. S. Veterans' Hospital, Harlencross, Tex.
St. Luke's School, St. Paul, Minn.
Criminal Court House, Chicago, Ill.
King Hotel, Baton Rouge, La.
Albers Residence, Saddle River, N. J.
Bennington College Buildings, Bennington, Vt.
Swedish Covenant Hospital, Chicago, Ill.
Waltham School, Waltham, Mass.
Park Place Hotel, Traverse City, Mich.

Horn Residence, Kansas City, Mo.

U. S. Post Office and Court House, Baltimore, Md.

Stone Hall, Wellesley College, Wellesley, Mass.

THE ROBERT MITCHELL MFG. CO.

Manufacturers of Cabinet Woodwork and Elevator Cabs
CINCINNATI, OHIO

BOSTON, 137 Newbury St.
NEW YORK, 30 Rockefeller Plaza, Room 1216
PHILADELPHIA, Architects Bldg.
BALTIMORE, 514 St. Paul Ave.
WASHINGTON, D. C., 1427 Eye St. N. W.

SALES OFFICES
ATLANTA, 101 Marietta Bldg.
NORFOLK, 808 W. Oceanview Ave.
PITTSBURGH, 406 Nixon Bldg.
COLUMBUS, 50 E. Broad St.
CLEVELAND, 1740 E. 12th St.

DETROIT, 802 Owen Bldg.
CHICAGO, 650 Arlington Pl.
ST. LOUIS, Chemical Bldg.
DALLAS, P. O. Box 295
LOS ANGELES, 7470 Santa Monica Blvd.

PRODUCTS

(As Formerly Manufactured by The Compound and Pyrono Door Co.)

COMPOUND Key-Veneered Doors

PYRONO Fireproof Wood Doors and Trim

TRIMOUNT Soundproof Doors

COMPOUND KEY-VENEERED WOOD DOORS

Guarantee

Full and complete without reservations. Covers defects in material and workmanship.

Construction

Stiles and rails have ⅞-in. core strips of chestnut or white pine cut from air dried lumber and thoroughly kiln dried. No scraps or refuse blocks used in cores.

Finishing Department—A very complete and adequate finishing department is maintained for the purpose of applying whatever part of the finish is desired by the customer. It is frequently a great convenience to have stain and filler, or even a complete finish applied before shipment is made.

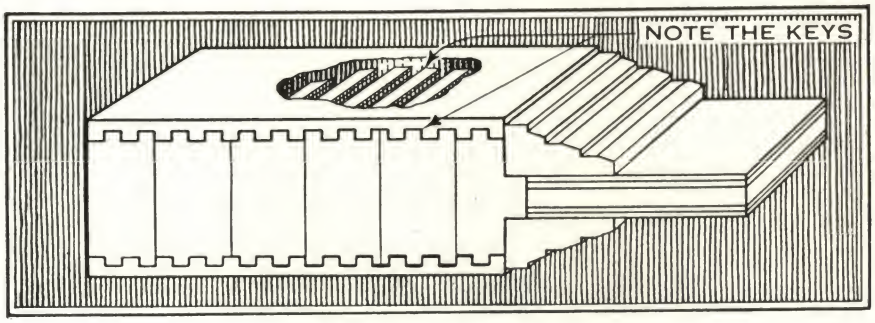
Specifications Key-Veneered Panel Doors

All interior stile and rail doors shall have stile and rail cores built up of strips of softwood not thicker than ⅞-in., glued together under pressure, with ¾-in. edge strips of same wood as face veneer. All stile and rail veneers shall be sawed ¼-in. thick to finish $\frac{3}{16}$-in. thick, and shall be tongued and grooved to the core with at least four tongues and four grooves to the inch and glued with best grade of glue. Tongues and grooves shall be cut not less than $\frac{1}{16}$-in. deep.

All panels shall be laminated five-ply with grain crossed on alternate plies. All stile and rail joints to be mortise and tenon construction.

All doors to be hand or belt smoothed and entirely free from cross grain sander scratches on plain surfaces and from knife marks on mouldings and moulded edges.

Outside doors to conform to above specifications, except to be put together with waterproof glue.



Key-Veneered Construction

Showing method of applying veneers by tongue and groove process which gives twice the gluing contact of the ordinary method of applying the veneers flat and locks the structure in an inseparable bond

Veneers are sawed ¼-in. thick, tongued and grooved to the core and rolled on under pressure by special patented process.

All panels are five-ply with face veneers either sawed, rotary cut or sliced, as the architect may specify.

Panel cores are all thoroughly re-dried, with face veneers ironed flat and re-dried in plate driers.

All wood stock goes into work dried within 3% to 4% of moisture and continues through a mill where atmospheric moisture is kept to a minimum.

Advantages of Construction—Glue surface between core and veneer is double that of any other veneer construction. (See illustration for core and veneer contact.) The shearing strain that is bound to occur between hardwood veneer and softwood core is overcome by this construction.

Strains and stresses are further neutralized by reversing the grain in core strips. All surplus glue and all air pockets are *rolled out* and are absolutely eliminated with this process.

Doors and trim may be prime coated or finished complete when desired.

Heavy sawed veneers applied in this way practically eliminate veneer trouble. Doors outlast the building.

X-ray Lead Lined Doors

A membrane of unbroken sheet lead built into the center of a finely finished wood door, with bolts protected by lead sleeves and lead caps all concealed by the face veneer without surface plugs. Lead sheathed "split jambs" also furnished complete for X-ray rooms. Consult our Engineering service.

A FEW OF THE PROMINENT BUILDINGS HAVING COMPOUND KEY-VENEERED DOORS

Hotel Chateau Frontenac, Quebec, Que.
Southwestern Bell Telephone Building, St. Louis, Mo.
Wrigley Building, Chicago, Ill.
Allegheny County Courthouse, Pittsburgh, Pa.
Rockefeller Institute, New York, N. Y.
Y. M. C. A., Columbus, Ohio
First National Bank, Cincinnati, Ohio
General Motors Office, Detroit, Mich.
Bellevue Hospital, New York, N. Y.
Harkness Memorial, Yale University, New Haven, Conn.
Yale Medical School, New Haven, Conn.
University of Michigan, Physics Building, Ann Arbor, Mich.
University of Michigan, Library Building, Ann Arbor, Mich.
University of Michigan, Waterman Gymnasium, Ann Arbor, Mich.
Belmont Hotel, Chicago, Ill.
Little Building, Boston, Mass.
Sacred Heart Seminary, Detroit, Mich.
Chamber of Commerce Building, Boston, Mass.
Vanderbilt University, Nashville, Tenn.

PYRONO FIREPROOF WOOD DOORS AND TRIM

Process of Construction

The PYRONO process is a mechanical method of fireproofing wood cores in the manufacture of doors and trim.

In PYRONO construction, cores of non-resinous wood are used and these when assembled are covered with pure, long fibre asbestos sheathing mechanically bonded to their surfaces, excluding oxygen, thus preventing ignition and assuring against spread of flame from the place of origin to other parts of a building—the one essential province of a fire door.

Designs—Flush doors with or without inlay. Panel doors, any arrangement of panels. Sash doors with glass lights not exceeding 720 sq. in. PYRONO doors and trim furnished in all cabinet woods used in interior finish.

Appropriate Use in Buildings

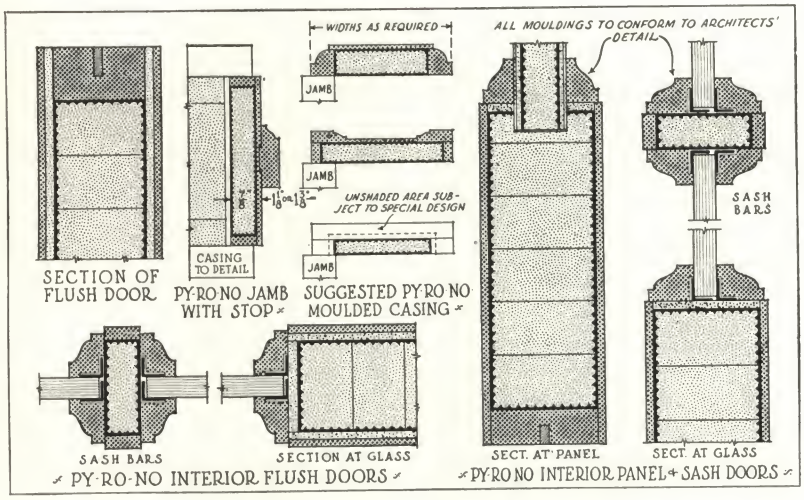
PYRONO doors are used for stairways, elevators, corridors and partitions, in office buildings, hotels, hospitals, apartments, schools, dormitories and similar types of fireproof buildings.

Appropriate Use on Passenger Ships and Yachts

The interior partitions, panels and doors of passenger ships and yachts can well be constructed or materials fireproofed by the PYRONO Process thereby securing the maximum protection against fire, consistent with the necessity for light weight and the desired architectural effects only obtainable by the use of wood.

Fully Tested

PYRONO, first introduced in 1910, has fully demonstrated in official tests and actual fires its perfect efficiency as a fire-retardant. Not one case of failure of a PYRONO door is recorded in the many actual fires which have occurred in buildings, great and small, protected by these doors.



Specifications of Pyrono Fireproof Doors

Pyrono Panel Doors—Fireproof paneled veneered doors to be constructed as follows: Stile and rail cores to consist of narrow softwood strips, thoroughly kiln-dried, not more than ⅞-in. thick and glued together under pressure. This wood core to be covered on face and edges with pure long fibre asbestos sheathing thoroughly glued and indented with not less than twenty-five indentations to the square inch. Each indent to be perforated at its base to perfect the glue bond between core and veneer. Hardwood veneer as specified to be applied to face of such stiles and rails, and edge strips to match veneer to be applied to all edges.

Panels shall be laminated seven-ply with grain crossed on alternate wood plies. The ply next to the core on each side shall be pure long fibre asbestos sheathing thoroughly glued and indented to the core as indicated for stile and rail construction. Face veneer to be as specified by architect. All panels to be not less than ¾-in. thick.

All stile and rail joints to be of mortise and tenon construction. All doors shall be hand or belt smoothed and entirely free from cross grained sander scratches.

Pyrono Flush Doors—Fireproof flush veneered doors to be constructed as follows:

Cores to consist of narrow softwood strips, thoroughly kiln-dried, not more than ⅞-in. thick, glued together to form stiles, cross rails and flush panels, and framed together with mortise and tenon joints. This wood core to be covered on face and edges with pure long fibre asbestos sheathing thoroughly glued and indented to the core, with not less than twenty-five indents to the square inch. Each indent to be perforated at its base bond to perfect the glue between core and cross band.

Hardwood edge-strips of same wood as face veneer to be applied on all edges and door to be completed by application of $\frac{1}{12}$-in. cross-band and face veneer not more than ⅛-in. thick.

All doors to be hand or belt smoothed and absolutely free from machine or sander marks that will appear on application of stain or varnish.

A FEW OF THE SCORES OF PYRONO INSTALLATIONS AND THEIR ARCHITECTS

Columbia—Presbyterian Medical Center, New York, N. Y.—James Gamble Rogers

Ohio Bell Telephone Building, Cleveland, Ohio—Hubbell & Benes

Drake Hotel, Chicago, Ill.—Marshall & Fox

Hotel Cleveland, Cleveland, Ohio—Graham, Anderson, Probst & White

Cunard Building, New York, N. Y.—Benjamin W. Morris

Federal Reserve Bank, Chicago, Ill.—Graham, Anderson, Probst & White

Federal Reserve Bank, Kansas City, Mo.—Graham, Anderson, Probst & White

Ohio State University Library, Columbus, Ohio—Allen & Collens

Hotel Statler, St. Louis, Mo.—Geo. B. Post & Sons

Aetna Life Insurance Co., Hartford, Conn.—James Gamble Rogers

Metropolitan Life Insurance Co., New York, N. Y.—D. Everett Waid

First National Bank, Wichita, Kan., Richards, McCarty & Bulford

Roosevelt School, Detroit, Mich.—Malcomson & Higginbotham

Edsel Ford Residence, Detroit, Mich.—Albert Kahn, Inc.

St. Regis Hotel, New York, N. Y.—Sloan & Robertson

McCormick Residence, Chicago, Ill.—John A. Armstrong

Carew Tower, Cincinnati, Ohio—W. W. Alschlager

Columbia Broadcasting Studios, New York, N. Y.—CBS Engineers

Pigott Building, Hamilton, Ont.—B. H. & F. Frack

Morgan Residence, Greenwich, Conn.—F. W. Whiting

RODDIS LUMBER AND VENEER COMPANY

Manufacturers of Flush, and Stile and Rail Doors of Finest Quality

MARSHFIELD, WIS.

FACTORIES: MARSHFIELD AND PARK FALLS, WIS.

WAREHOUSES

MARSHFIELD, WIS., Roddis Lumber & Veneer Co.
NEW YORK, N. Y., Roddis Plywood Co., 628 W. 28th Street
CHICAGO, ILL., Roddis Co., 1435 W. 37th Street
CINCINNATI, OHIO, Central Panel & Supply Co., 110 W. Commerce Street
MILWAUKEE, WIS., Roddis Lumber & Veneer Co., 4601 W. State Street
KANSAS CITY, MO., Roddis Lumber & Veneer Co., 2729 Southwest Boulevard
DALLAS, TEX., Roddis Lumber & Veneer Co., 2403 So. Harwood Street
SAN ANTONIO, TEX., Roddis Lumber & Veneer Co., 727 No. Cherry Street

DISTRIBUTORS IN ALL PRINCIPAL CITIES

Forty years of fine door construction constitute impressive evidence as to the reliability and manufacturing reputation of the RODDIS LUMBER AND VENEER COMPANY. Our experts select the best trees from Roddis' own timber lands. Roddis woodsmen fell these trees and cut the logs. Roddis railroads haul the logs to Roddis mills where *we finish our own wood and make our own veneer.* All lumber and wood in our plant is fully *cured for two years* before cutting into door parts and sections. Thus you see that from start to finish a Roddis door is truly a Roddis Product—ownership, conception and control; in total Roddis responsibility from forest to installation.

This Red-White-Blue Dowel Trade-Mark is on the edge of the Roddis Flush Door. It is the Roddis mark of identity and quality

Roddis Flush Door Construction

The Roddis Flush Door consists of five layers of wood. The core of soft wood; the cross band of hardwood veneer on both sides; the surface, or finishing veneer of hardwood on both sides with an edge-strip closure on all four edges. This construction is the reason for the enduring superiority of Roddis Flush Doors.

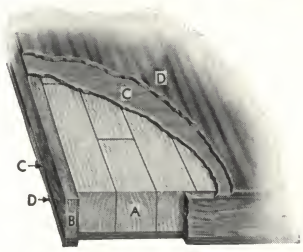
The Core

The core is made of varying length narrow block-strips of soft wood (or Conifer) of uniform width and thickness. They are cement-glued together under pressure by a special Roddis compounded glue that is totally waterproof.

The varying lengths of block strips are reinforcing to one another, and also equalize and absorb the usual tendency to shrink, swell and warp.

Hardwood Edge-Strip

The Roddis Flush Door standard construction includes edge-strips at the top and bottom as well as at both side ends of the door. After completing the core, this continuous band of hardwood, ¾ in. thick, is cement-glued with waterproof glue under pressure, to the top, bottom and both side ends of the core—securely sealing the softwood core against the entrance of moisture. After being edge-stripped, the core is again taken to the kilns, and all moisture absorbed from the air during this operation is eliminated, insuring perfect condition for the next step of construction.



Details of Roddis Flush Door Construction

A—Core of narrow white pine strips glued solid to provide base for veneers.

B—¾-in. hardwood strip on all four edges.

C—Hardwood cross-banding veneer sealing core faces.

D—Surface veneer of desired wood.

Cross Band Veneer

The cross band, hardwood veneer, ⅛ in. thick, is placed over the face of the core—on both sides—with the grain running horizontally, cross-wise. This veneer layer is specially selected for strength. It entirely seals the face surface of the core—preventing moisture entering the body of the door. The cross-wise grain of this veneer layer provides lateral prevention against possible tendency to warp, sag, shrink or swell, and materially increases the strength of the door. This layer is cement-glued to the core under hydraulic pressure, so that it becomes a solid part of the core.

Surface Veneer

The surface veneer is applied to each face of the door, over the cross-band veneer—with the grain running vertically, the long way and opposite to the cross-band grain. This opposite grain construction adds further tensile strength to the door, insuring against any possible variation. Roddis' own thoroughly water-proof, rock-like, cement glue is used in applying this layer of veneer—pressed into permanent place under tons of hydraulic pressure.

Any Wood, Figure and Finish

The surface veneer of Roddis Flush Doors is furnished in any desired wood, plain or fancy—with a complete choice of grain, quality, figure and finish, to conform with any decorative scheme and plan of architecture.

Flush Door Specifications

All doors shall be laminated 5-ply flush veneer doors without panels, as manufactured by RODDIS LUMBER AND VENEER COMPANY, Marshfield, Wisconsin.

Cores built up of narrow White Pine strips glued solid to provide base for veneers; cores to be double veneered with two ⅛-in. hardwood veneers on each side, glued on and thoroughly dried; the first veneer shall have grain running crosswise, and the second or surface veneer with grain running lengthwise. The first or (cross-banding) veneer shall run full to the four edges of the door. Top and bottom of door, as well as the two side edges, shall be banded with a hardwood edge strip ¾ in. thick and glued to the core.

Flush Doors in Unselected Birch or Plain Red Oak in Stock for Prompt Shipment

RODDIS CUSTOM-BUILT STILE AND RAIL DOORS

This Company is an outstanding manufacturer of stile and rail doors. They are custom-built and of unusually fine construction, so that we can offer the architect the utmost freedom in the scope of his design with the assurance of faithful reproduction.

Any Size—Any Design—Any Veneer

No limitations are imposed by Roddis in the design of the Custom-Built Door. It may be made in any size and finished in any veneers or combinations. One panel doors, one panel and one light, two panels and one light or one long light, are among the variations that may be employed. Like all doors built by Roddis, the Custom-Built employs those principles of construction that assure permanence. The Roddis guarantee is based on complete satisfaction and perfect materials and workmanship.

Stiles and Rails

Stiles and rails may be of any widths. The cores for stiles and rails are built up of narrow strips of softwood, literally welded together with special glue. The softwoods so used are cut especially for this purpose and are thoroughly aged to assure complete drying.

Edge Strips

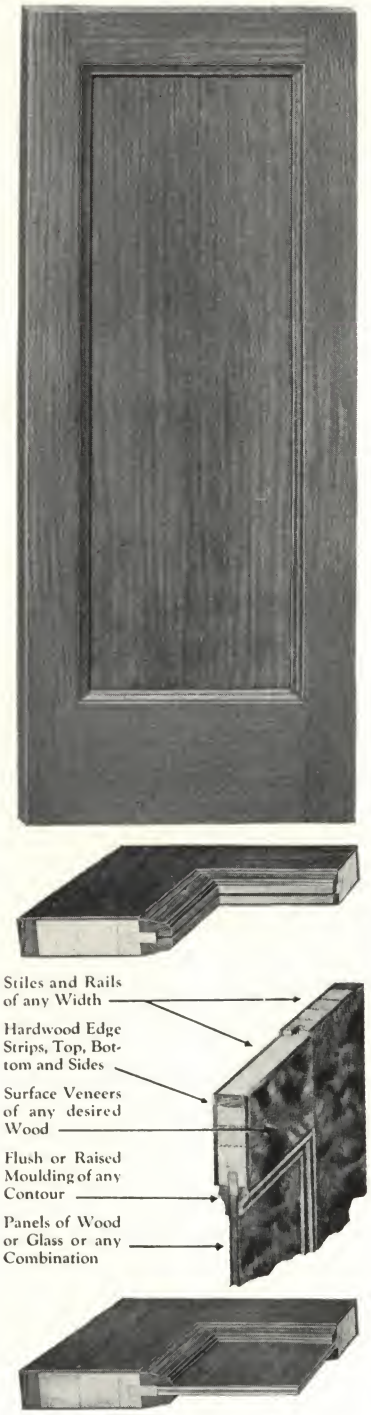
Standard construction includes edge strips made of same material as face veneer.

Solid Sticking—Flush or Raised Mouldings

Solid sticking, flush or raised mouldings, of any width or contour in any kind of wood may be used in Custom-Built Doors, either in standard or original designs.

Spline

The spline may be glued or nailed in place or it may be furnished as an integral part of the core.



Panels

Panels may be wood or open for glass or any combination of the two. Made in any thickness, finished with any veneer or any combination of veneers. They are snugly fitted but not glued in place and as many may be used as desired.

Construction

Roddis standard dowel construction specifies $\frac{9}{16}$-in. hardwood dowels spaced approximately 3 in. on center. Blind mortise and tenon construction can be furnished, when specified, at a slightly higher cost.

Veneers

Walnut, African Mahogany, Birch, plain red or white Oak, quarter sawed white Oak, or unselected gum, red gum or quarter figured red gum may be used singly or in combination in the Custom-Built door. This with freedom in selection of moulding, gives the architect absolute freedom in his design.

Specifications

Face veneers to be of wood specified ⅛ in. thick before sanding, Pine cores, ¾ in. hardwood side edge strips to match face veneer, standard dowel construction, laminated 3 or 5-ply panels of specified thickness, either solid stuck or hand moulded, glass beads included where required, machine sanded, and in the white.

Finishing—Roddis doors are properly hand cleaned and should not be exposed to damp weather, dust or dirt without a primer or protecting coat of finish. In order to insure our doors will be in proper condition when ready to install, we maintain a complete finishing department. Charges are reasonable.

Special Doors—Individual or stock designs in any wood—inlaid, X-ray, mirror, cut-out, metal covered, wardrobe and ventilating doors.

Guarantee—Each door shall be fully guaranteed by the manufacturer as to construction according to these specifications, and against defects in workmanship or material.

Roddis Custom-Built Doors May Be Ordered for Prompt Delivery

RODDIS X-RAY DOORS

This door is equipped with a thick, continuous sheet of lead down the center of the door, which is bolted and held in position with lead-covered bolts. It follows in all respects the fundamental Roddis design and construction as used in Roddis flush doors. Full information on request.

RODDIS WAINSCOTING

We supply quality wainscoting in any wood. Our new and original manufacturing methods enable us to supply wainscoting for erection without the use of nails or screws in the exposed faces.

We are prepared to construct wainscoting in accordance with and design or pattern and with any wood inlay the architect or decorator desires.

WHEELER OSGOOD SALES CORPORATION

MANUFACTURERS OF

Doors, Trim, Moulding, Plywood, Wallboard and Plyform

FACTORY

TACOMA, WASHINGTON

GENERAL SALES OFFICES: 122 South Michigan Avenue, CHICAGO, ILL.

Products

LAMINEX DOORS of Douglas Fir; PHILIPPINE LAMINEX DOORS; Woco (Solid) Doors of Fir; Woco (Solid) GARAGE DOORS of Fir.

Also Trim; Mouldings; Columns; Newels.

For our page on Plywood, Wallboard and Plyform, see File Index.

The Company

Backed by 46 years' experience, Wheeler Osgood pioneered the introduction of laminated products.

The plant is known not only for its capacity, but for the finest of equipment and methods. It is located "next door" to the huge Douglas Fir forests, supplying virgin growth timber. The Wheeler Osgood Laboratory for research and development has resulted in many added efficiencies, such as the famous Laminex waterproof glue. The company also has Philippine connections of long standing, assuring an adequate supply of Philippine hardwoods for the complete line of products now offered.

Wheeler Osgood products under the names of "Laminex," "Woco," and "Philippine Laminex" are sold by leading jobbers in every section of the United States, and in many important countries of the world.

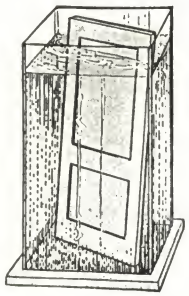


Illustration of the famous Laminex Water Test, where a Laminex Douglas Fir Door is submerged in water for a period of several days, *without warping.*

Engineered Doors

Laminex and Woco Doors are scientifically designed and built to give long, trouble-free service. Only the choicest and most carefully selected lumber is used. Lumber stocks are scientifically dried to uniform moisture content, providing maximum protection against warping. Laminex veneered stile and rail construction result in the elimination of loose veneers, sunken cores, warping, twisting and rough sticking. New features in dowel construction offer maximum protection against opening of joints.

This Guarantee Is Attached to Every Laminex Door

Laminex construction is provided for doors of Douglas Fir, or Philippine Laminex. Replacement will be made of any Laminex Door that fails to serve satisfactorily, not due to misuse or neglect

This Woco Guarantee Stands Behind Every Woco Door

Woco Solid Doors are available in Douglas Fir.
Woco Garage Doors are available in Douglas Fir

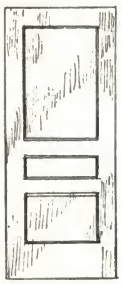
Laminex water-resistant glue further protects against warping. The finest sanding equipment provides a smooth, polished finish. Double inspection assures maintenance of highest quality standards.

Laminex Doors were tested by the Forest Products Laboratory of the University of Washington, and showed extreme resistance to the usual tendencies to shrink, swell, warp and come apart. The Laminex water test has been conducted throughout the country, where Laminex Fir Doors were immersed in water for days and failed to show injury.

Today, over four million Laminex Doors are in service, and offer practical proof of their unusual ability to stand up for years of use. Laminex Doors enjoy the confidence of architects.

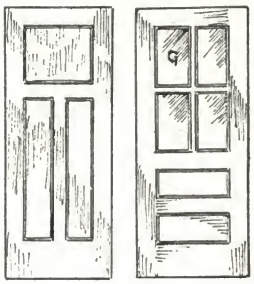
Wide Range of Designs

WHEELER OSGOOD SALES CORPORATION offer in their Laminex, Philippine Laminex and Woco products a line of doors for both interiors and entrances. The line is wide to meet virtually any requirement. Across the lower part of these pages are illustrated 24 stock designs in the line.



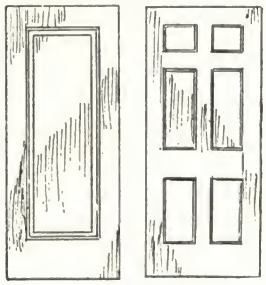
Left:
F33
Three-panel door

Right:
F62
Three-panel door with two vertical panels



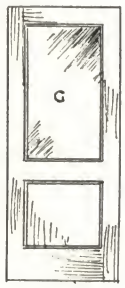
Left:
F415
Practical door with four lights of equal size

Right:
F1
Large panel door with heavy moulding around panel



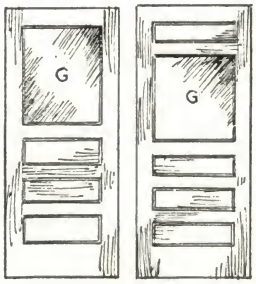
Left:
F66
Dignified entrance door, 6-panel design

Right:
F182
Single panel below large light—exterior use



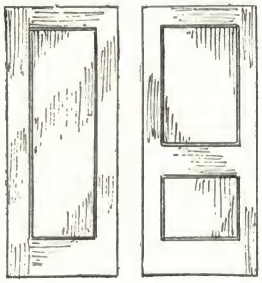
Left:
F5
Attractive five panel door with all panels equal

Right:
F214
Three-panel door with large light —exterior use



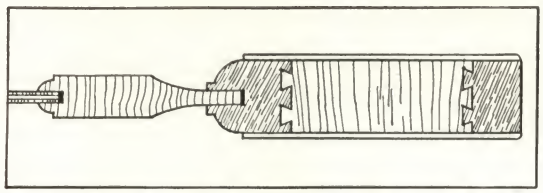
Left:
F117
Three panels below and one above large light

Right:
F22
Full panel door —with narrow moulding



Left:
F82
Two-panel door with large panel top

Right:
F29
Two-panel door with large panel bottom

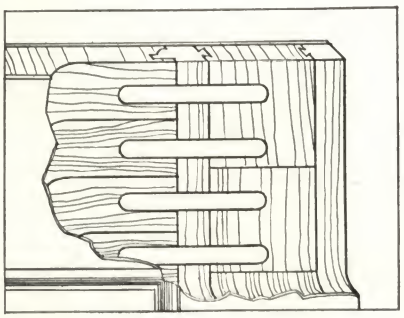


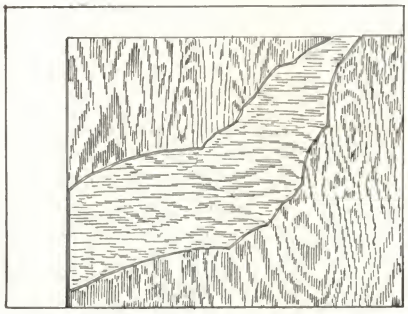
Typical Cross Section Through the Stile or Rail of a Laminex Door

Note the solidity of rail construction. Woco Doors are constructed in a similar manner

Dowel Construction in All Wheeler Osgood Doors

Four wooden dowels are used in the construction of bottom rail joints and two in top rail joint. All dowels are ⅝-in. in diameter and 5 ins. long. They give over 50% more strength and 30% greater cement surface than those with a half inch diameter. Special equipment sprays glue to entire surface of dowel hole and also carries glue to moulding at top of rail and bottom of rail





Showing Panel Construction

Clear, 3-ply panels with grain crossed. They will not buckle or blister

Laminex Construction

In order to provide protection against warping, the stiles of Laminex Doors are built of short, separate core blocks with the grain crossed. Rails are of the same construction. Panels are 3-ply. To insure absolute rigidity, full length edge braces are used, dovetailed and wedged to the core blocks. Four wood dowels instead of the usual three, connect the bottom rail to the stile. These dowels are ⅝ in. in diameter and give 50% more strength and 30% more holding surface than the commonly used ½-in. dowels.

This construction, plus the use of Laminex waterproof cement, and dried under tremendous pressure, provides a door that is virtually waterproof. The use of cement in this way welds the sections into what is practically a solid unit, and also forms moistureproof protection around each core section. Swelling or shrinking are reduced to the minimum.

Laminex Doors of Douglas Fir

The majority of Laminex Doors are constructed of clear, selected old growth Douglas Fir. This wood is particularly suited for door construction. It is remarkably free from pitch. It is easily worked. The durability rating of Douglas Fir is 60% higher than California Sugar Pine, and 88% higher than Western Yellow Pine, according to the U. S. Department of Agriculture.

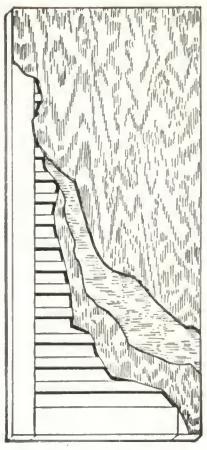
Laminex Doors of Douglas Fir come in both the flat and vertical grain. The flat grain possesses a beautiful flower, and takes stain perfectly. The vertical cut is particularly suited for fine enamel work.

Laminex Doors of Philippine Hardwood

Philippine Laminex permits the design of doors with unusual beauty and distinction, at a surprisingly moderate cost. Philippine Hardwood can be finished in all shades from dark red mahogany to light walnut.

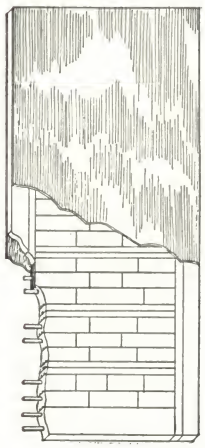
By proper staining and finishing, all the various tones of these colors, also dull antique, may be obtained.

The close-grained, ribbon effect of Philippine Hardwood is attractive for both doors and trim. Modern effects and diamond matchings can be used. The Wheeler Osgood method of preparation brings out the maximum beauty of this wood. Extremely careful and thorough sanding and resanding, scraping and hand smoothing, result in a door that is equal to the finest custom built product.



Hollowood Door

Core is made up of stiles, top rail and bottom rail, and 16 intermediate rails, which effectively prevent sagging. Faces consist of 3-ply Laminex panel. Air outlets full height of door. Any stock size

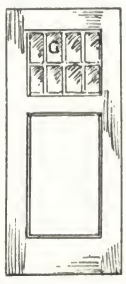


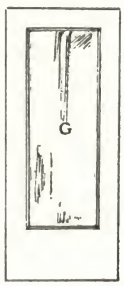
Westwood Door

Core is built up of two Lindermanized stiles, wide top, bottom and cross rails jointed together, making a flush solid, built-up core. Any type of light may be cut in

Left:
F1535
Full glass door made up of 15 lights

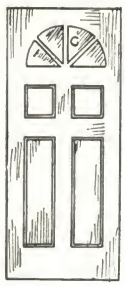
Right:
F810
One panel door with 8-light opening at top

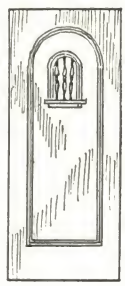




Left:
F37
Plain full panel glass door—for entrances

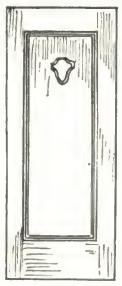
Right:
71
Four-panel door with 4-light fan at top

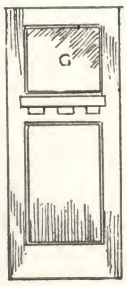




Left:
73
Door with decorative curved top moulding and grille opening

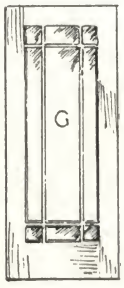
Right:
68
Full panel door —flush or raised moulding, knocker block

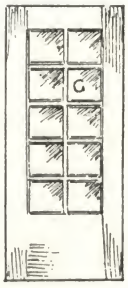




Left:
F110
One-panel door with large light and water table

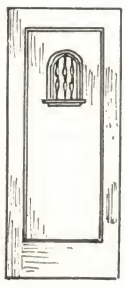
Right:
F936M
Full glass door divided into 9 lights

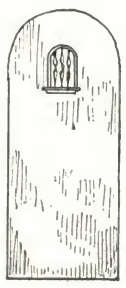




Left:
F1037
Practical glass door with 10-light three-quarter glass

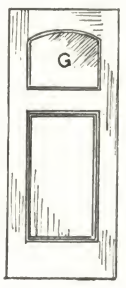
Right:
74
Full panel door with decorative grille opening





Left:
106
Curbed top, flat surface door, with grille opening

Right:
69
One panel door, flush or raised moulding, light at top



Design No. 107

Design No. 66

Design No. 73

Showing three representative Special Type Wheeler Osgood Laminex Doors. Available in Douglas Fir, or Philippine Laminex. Any style can be produced to conform to particular requirements

Standard Specifications for Laminex Doors

All doors throughout shall be (Laminex Fir) or (Philippine Mahogany Laminex) manufactured by WHEELER OSGOOD SALES CORPORATION, Tacoma, Wash.

Stiles and rails shall be built up.

In Laminex Douglas Fir, face veneers shall be (flat) (vertical) grain cemented to cores with Laminex waterproof cement.

In Philippine Mahogany Laminex, face veneers shall be ribbon grain cemented to cores with Laminex waterproof cement.

Door panels shall be Laminex 3-ply, made up with Laminex waterproof cement.

Doors, when delivered shall bear the Laminex guarantee label and trade-mark.

Woco Solid Doors

These doors are built with solid stiles and rails. And, while designed to sell at a lower price than Laminex Doors, they are built to rigid standards of workmanship and materials. Woco Doors carry a guarantee of satisfactory service. They are available in a wide range of designs, complete enough to meet virtually any type of need for either interior or exterior use.

Construction of Woco Doors—Built of selected Douglas Fir. Stiles and rails are solid. Panels are 3-ply cross-grain. All members of the doors are cemented together with the famous Laminex waterproof cement. Woco Doors have the same efficient construction—more and larger dowels—giving greatly increased strength over ordinary design. Woco Douglas Fir Doors are furnished with vertical grain stiles and rails.

Standard Specifications for Woco (Solid) Doors

All doors throughout shall be (Woco Fir) manufactured by WHEELER OSGOOD SALES CORPORATION, Tacoma, Wash.

Stiles and rails shall be solid. Door panels shall be Laminex 3-ply, cemented together with Laminex waterproof cement.

The doors, when delivered to the job, shall bear the Woco guarantee label and trade-mark.

Woco Garage Doors

Ruggedly constructed, these doors will withstand the long and hard use of garage service, whether it is for private or public garages.

Manufactured from old growth Douglas Fir. The Wheeler Osgood method of construction insures that these doors will hang straight and close without sagging.

Choice of flat grain or solid raised panels. Made throughout of clear lumber. Strongly constructed in every detail. The workmanship is of the finest for this type of door. The smooth surface of Douglas Fir provides an ideal base for paint.

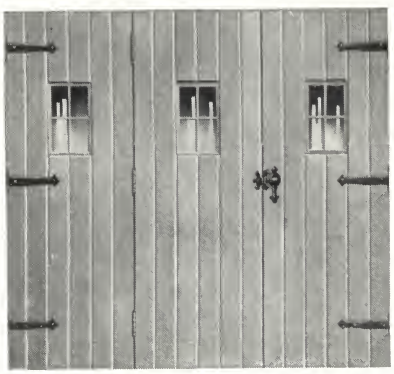
Woco Garage Doors are offered in a wide range of designs to meet virtually any garage need. Furnished in pairs or sets of three. Three of the many designs are shown above.

Design No. F-691

"Sawbuck" Garage Door with cross braces. Fir "V" panels

Design No. F-696

"Whippet" Garage Door with 3-ply Laminex panels, or solid raised vertical or flat grain panels



Left:

Design No. F-190

"Aristocrat" Garage Door. Vertical grain Douglas Fir. Furnished with one-light openings ready for variety of designs such as leaded glass. Doors are of hollow type construction to avoid strain on hardware and to provide ease of operation

Wheeler Osgood's Co-operation with Architects

To architects, engineers, contractors, and owners, WHEELER OSGOOD SALES CORPORATION freely offer their services in planning efficient application and use of any of their products. Further details and samples are available on request.

WINDOWS··METAL AND WOOD

- SECTION - 11

MEMORANDA

WINDOWS··METAL AND WOOD
- SECTION - 11

CATALOGS *1 to 12*

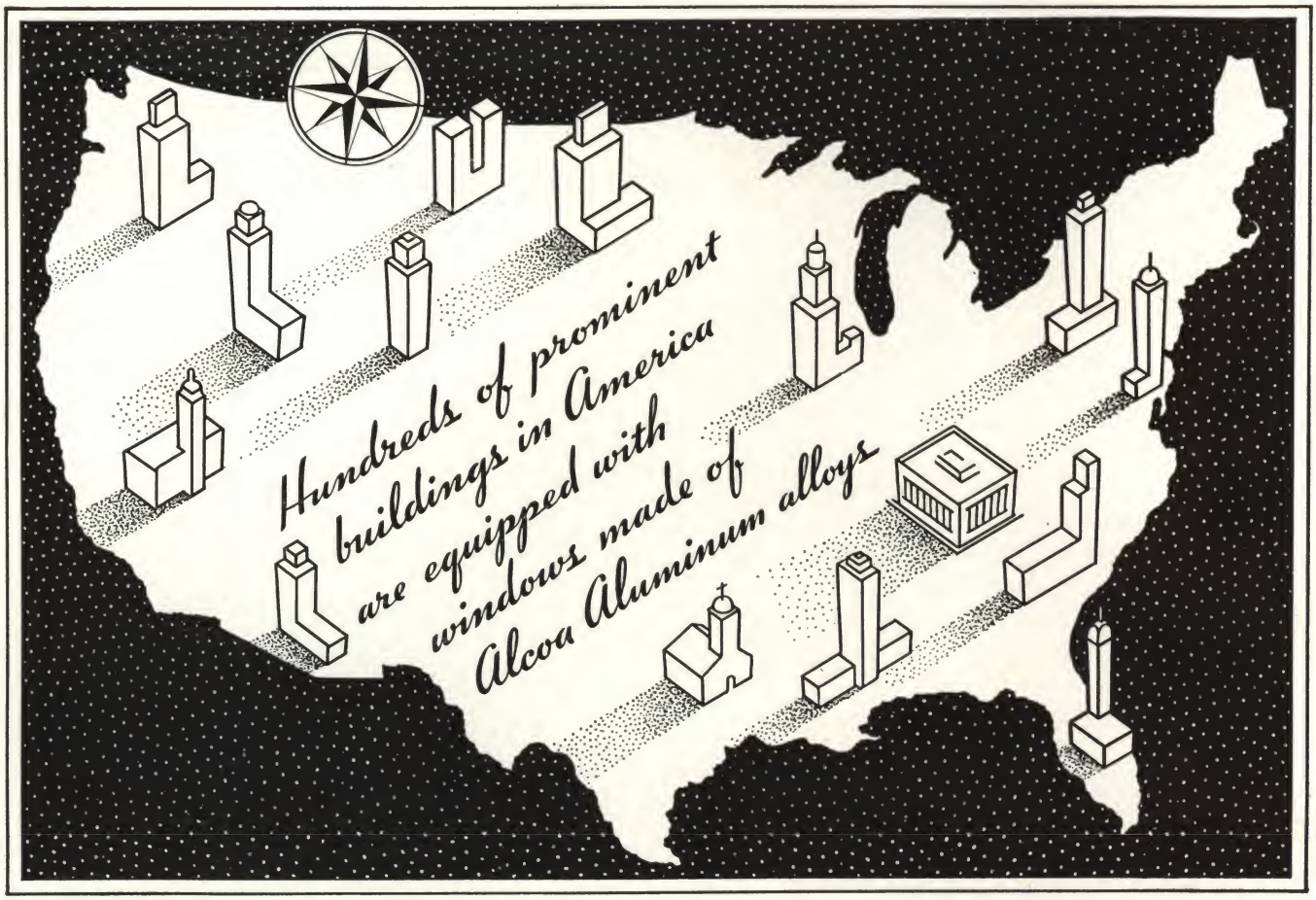
METAL

ALUMINUM COMPANY OF AMERICA

Member of The Producers' Council, Inc.

Manufacturers of Alcoa Aluminum and Its Alloys

1844 Gulf Building
PITTSBURGH, PA.



WINDOW FRAMES AND SASH MADE OF ALCOA ALUMINUM

Advantages

Light Weight
Low Maintenance
Corrosion Resistance
Non-staining
Non-warping
Non-splitting

Sills: Window Sills of Alcoa Aluminum have the same advantages as cited for windows and sash. Extruded sills come in any desired length. This eliminates troublesome joints and speeds up erection.

We do not make windows, but all leading manufacturers fabricate all kinds in Aluminum, Double Hung, Casement, Projected, Industrial.

40 of the Buildings

American Red Cross Bldg., Washington, D. C.
Attica State Prison, Attica, N. Y.
Berks County Courthouse, Reading, Pa.
Boston Post Office, Boston, Mass.
Brisbane Residence, Allaire, N. J.
Cincinnati Times Star Bldg., Cincinnati, Ohio.
Cincinnati Union Terminal, Cincinnati, Ohio.
Cities Service Bldg., New York, N. Y.
City Bank, Farmers Trust Bldg., New York, N. Y.
County Office Building, Pittsburgh, Pa.
Department of Justice Bldg., Washington, D. C.
Easterly Sewage Disposal Plant, Cleveland, Ohio.
East Liberty Presbyterian Church, Pittsburgh, Pa.
Federal Reserve Building, Pittsburgh, Pa.
Folger Shakespeare Library, Washington, D. C.
Goelet Building, New York, N. Y.
Greensboro Post Office, Greensboro, N. C.
Gulf Building, Pittsburgh, Pa.
L. F. Hersh Bros. Office Bldg., Elizabeth, N. J.
Kalamazoo City Hall, Kalamazoo, Mich.
Kansas City Post Office, Kansas City, Mo.
Key West Post Office, Key West, Fla.
Lapeyre Miltenberger Home for Convalescents, New Orleans, La.
Lincoln Liberty Building, Philadelphia, Pa.
Louisiana State University (Medical Center Building), New Orleans, La.
Marcy State Hospital, Marcy, N. Y.
Marshall Field Building, Chicago, Ill.
Mellon Institute, Pittsburgh, Pa.
Mutual Home & Savings Ass'n, Dayton, Ohio.
Norfolk Post Office, Norfolk, Va.
Ohio Bell Telephone Bldg., Dayton, Ohio.
Pennsylvania Railroad Station, Newark, N. J.
Philadelphia Savings Fund Bldg., Philadelphia, Pa.
Ramsey County Courthouse, St. Paul, Minn.
San Francisco Women's College, San Francisco, Calif.
A. O. Smith Eng. & Research Lab., Milwaukee, Wis.
St. Louis Courthouse, St. Louis, Mo.
U. S. Public Health Service Bldg., Washington, D. C.
Wassaic State School, Amenia, N. Y.
Wichita Falls Post Office, Wichita Falls, Texas.

Photograph reference on page 15

BAYLEY

STEEL WINDOWS . STEEL DOORS . AND OPERATORS

® 1936—The William Bayley Co

THE WILLIAM BAYLEY CO.

SPRINGFIELD, OHIO

FOUNDED 1881

This Generation in management and the men of today's organization, while mindful of 54 years background, use this inspiration and experience to make better windows, doors and operators. Bayley patents, many of them recent, forecast continued undisputed leadership.

Steel, wrought iron, bronze and aluminum are extensively used.

The basic features in products are built around fundamentals that prompt the most advanced methods in mechanical jointing, riveting, welding, pressing and finishing. Bayley windows are of many kinds for all buildings. All are of materials, design, finish and workmanship best suited to necessities of service and they group as follows:

SERIES 30 PRODUCTS have two flat face parallel-to-glass contacts around ventilators. These casement sections classify as intermediate but have unusual oversize depth of 1⅝". They are available in steel, bronze, and aluminum. Workmanship, trim, and finish in Series 30 products are Bayley's best. Pages 2-7 inclusive.

DETENTION AND PROTECTION WINDOWS in superbar, intermediate, and industrial weights. The first two have Series 30 casements superimposed on the guard. Ventilators may operate through the guard in less rigid work. All told 6 kinds. Many standards and special sizes. Ventilators are screened. All detention windows available in mild steel super bar can also be reinforced with steel of tool resisting non-annealable qualities.

PIVOTED WINDOWS SCREENED an exclusive Bayley development, giving complete insect protection. Two grades in steel and wrought iron. Pages 12-13.

PIVOTED WINDOWS a basic product. Available in steel, wrought iron and aluminum. Pages 9-11 inclusive.

PROJECTED WINDOWS COMMERCIAL available in steel, wrought iron and aluminum. Page 14.

PROJECTED WINDOWS ARCHITECTURAL for better buildings and large dollar value. A bargain product in steel. Page 15.

MECHANICAL OPERATORS formerly manufactured by The Metallic Sash Operator Company of St. Louis recently acquired outright by Bayley and now manufactured at Springfield, Ohio. Offered with or without window products.

SCREENS an integral part of all products that require them are manufactured by Bayley.

UTILITY AND BASEMENT WINDOWS always priced low in relation to weight and value. Available in steel and wrought iron.

ECONOMY INSERTS are nailed to jamb and head forms before concrete is poured and become imbedded to provide a mastic seal for any metal window. An exclusive Bayley development. Page 8.

CONTINUOUS WINDOWS AND OPERATORS in 3, 4, 5, and 6 foot heights for monitors and saw-tooth roof construction. Pages 16-17.

DOORS. Hinged, sliding, rolling and overhead in steel. UTILITY for inside use. INDUSTRIAL for general service. TUBULAR to withstand roughest treatment. TUBULAR or STRUCTURAL for airplane hangars and largest openings. LOCKS manufactured by Bayley are most reliable for heavy duty. Pages 18-19.

INSTALLATION INSTRUCTIONS—are included in Box No. {1}. Bayley maintains a nationwide erection organization and recommends its employment.

BAYLEY CASEMENTS SERIES 30

Steel, Bronze and Aluminum

RECOMMENDED FOR LIVING PURPOSE, OFFICE AND MONUMENTAL BUILDINGS

SECTIONS are of new billet hot rolled when of steel and extruded when of bronze or aluminum. Classification intermediate. Depth 1⅝". Minimum thickness ⅛". Process straightened and made with flat surface contacts parallel-to-glass and with provision for outside glazing.

SHOP PRACTICE includes the use of only carefully selected materials, most accurate machining and fitting, and corners of units of ventilators and of openings for ventilators butt welded and surface ground. Finish is one coat of gray paint.

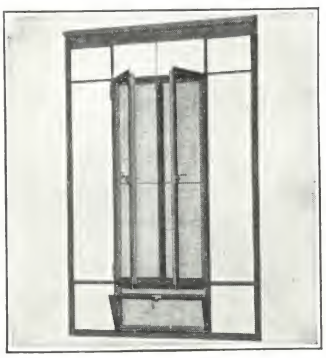
HARDWARE includes extended hinges of steel to provide arm room for outside washing. They are welded to casements and have solid bronze collar pivots. Underscreen casement operator is of the rotary type with bronze operating handle and bronze locking handle, in statuary bronze finish. Bronze friction adjuster of the concealed type, and lever handles are standard where screens are not required. For inswing see illustrations. Standard hardware is solid bronze.

SCREENS of Bayley manufacture are long life and rigid. Frames of steel or bronze.

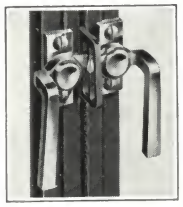
SERIES 30 INSWING—*Screened*

Bayley's exclusive Sir Christopher is far more than just one steel window of a numbered series. American in design and manufacture. Free from entanglement of the past. Unusual features of layout, quality, convenience and efficiency are individual and distinctive.

Vertical casements opening flat against fixed glass, outside washing from inside, fixed side lights for draperies, life safety because of difficult egress through narrow ventilator spaces, screens with steel or bronze frames hinged and to lock, supplement other features of this draft control easily operated window.



Casement Inswinging



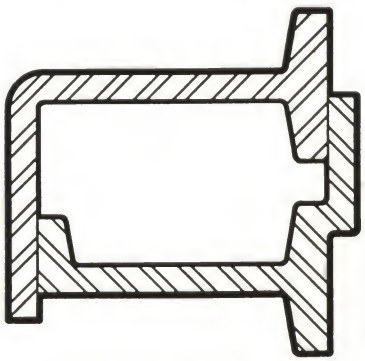
Bronze Handles
351A & 381A

SERIES 30 COMBINATION—*Screened*

Incorporated in this steel window is a sill line inswinging casement similar to that of Sir Christopher. The vertical casements, however, swing out. The fixed portions also offer drapery spaces.

Hardware for the outswinging parts is through the sill and screens for these openings are on the inside. In construction and material these screens duplicate those of Sir Christopher, are Bayley made and an integral part of the window.

For those not desiring the complete inswing, but whose requirements fall within limited layouts, this window is recommended above all other casement windows.

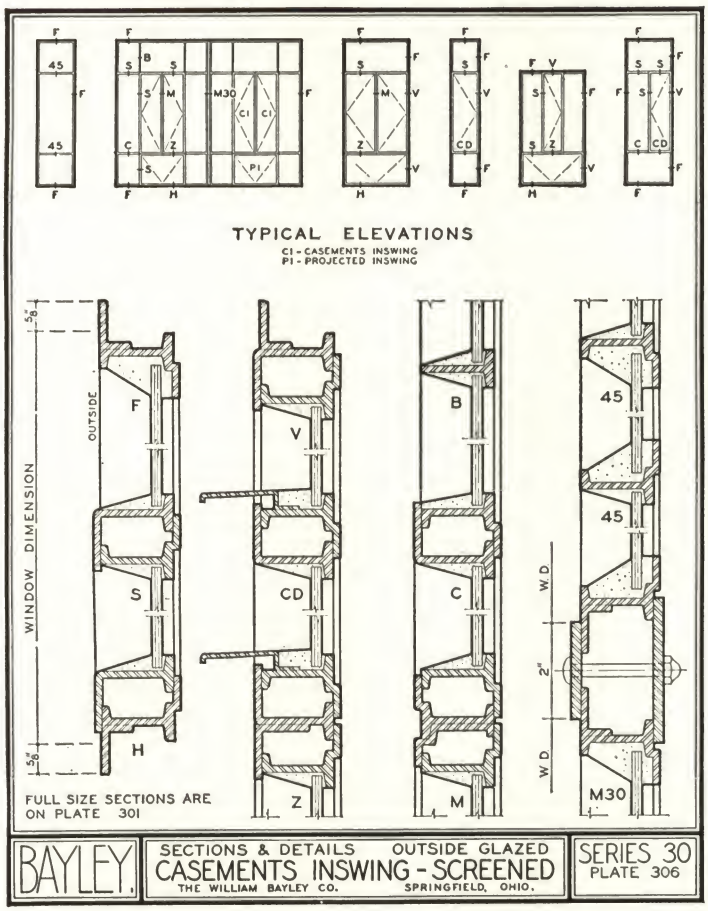


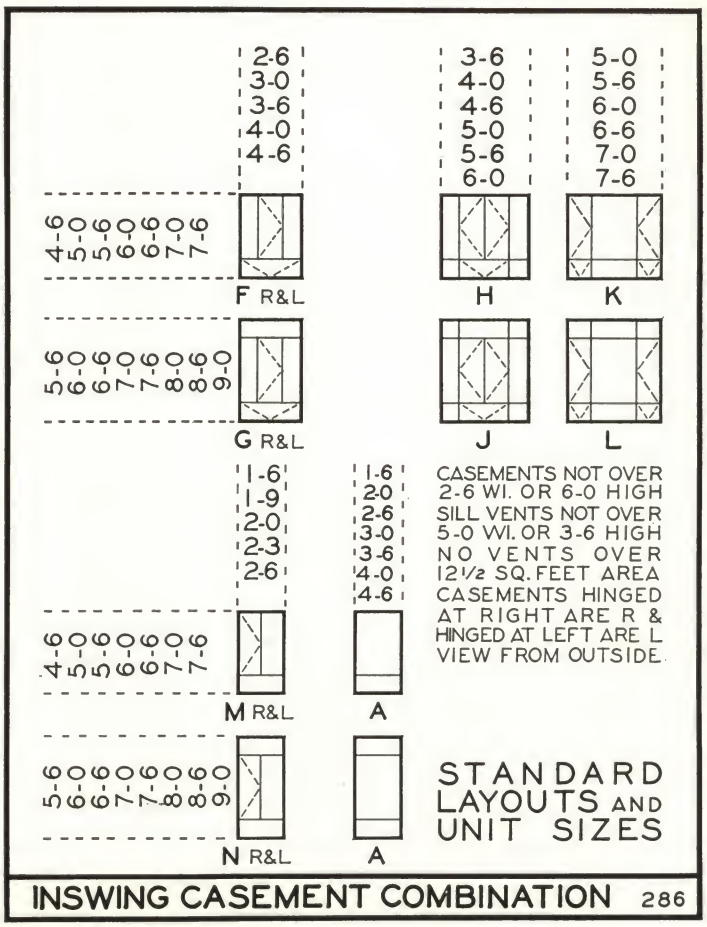
CASEMENT SECTIONS
Full Size

Bronze Handle
H70

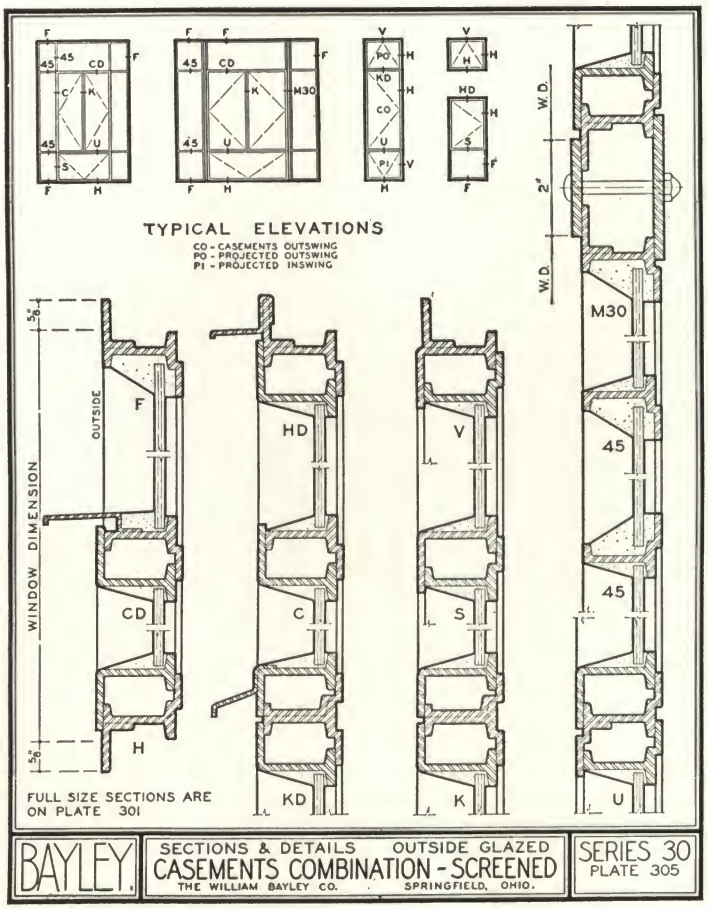
Casement Combination

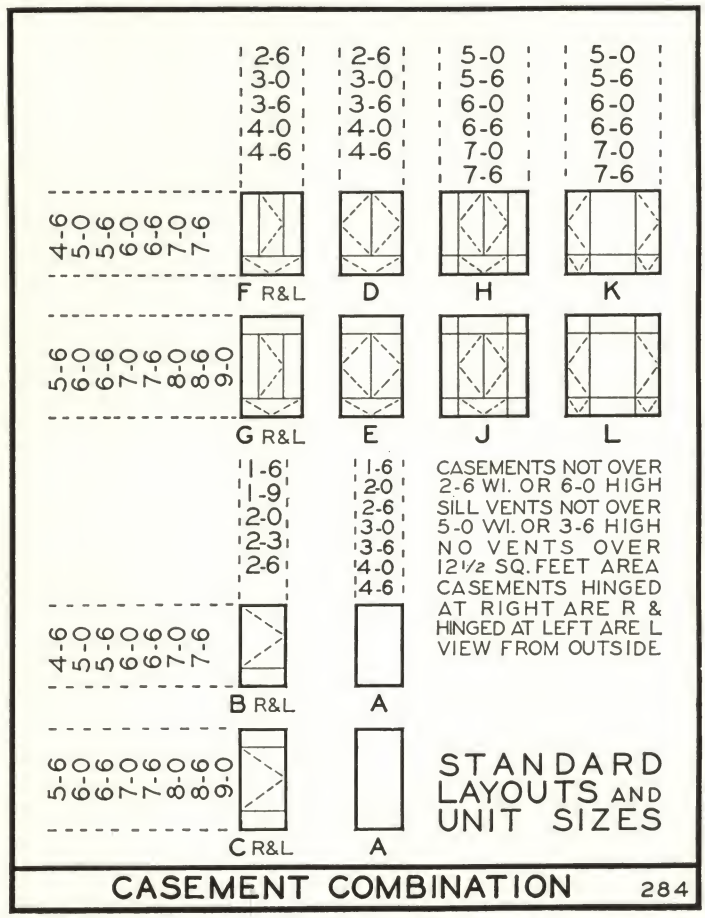
SERIES 30 CASEMENTS INSWINGING—*Screened*





SERIES 30 CASEMENTS COMBINATION—*Screened*





SERIES 30 CASEMENTS OUTSWING — *Screened*

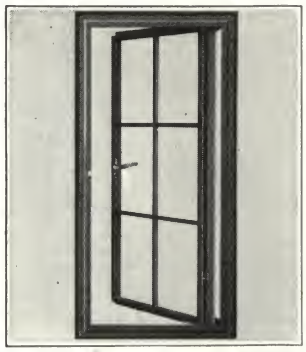
Very early workers in metal casements blazed the trail for these single or double outswinging ventilators, sometimes combined with casement transoms.

Standards and listed special layouts are extensive in sizes and numbers. Available in steel and bronze and aluminum.

Ventilators like in all Series 30 products are rigid with sections shaped to insure good permanent contacts. Their 1 5/8″ depth is fabricated the Bayley way with mitered corners of casements and the corners of ventilator openings butt welded and ground flush on contact and outside faces. Welding converts each of these frames into continuous perimeters. The flat, parallel-to-glass contacts, assures good weather protection even though the casement may become sagged a trifle through rough handling before or after installation.

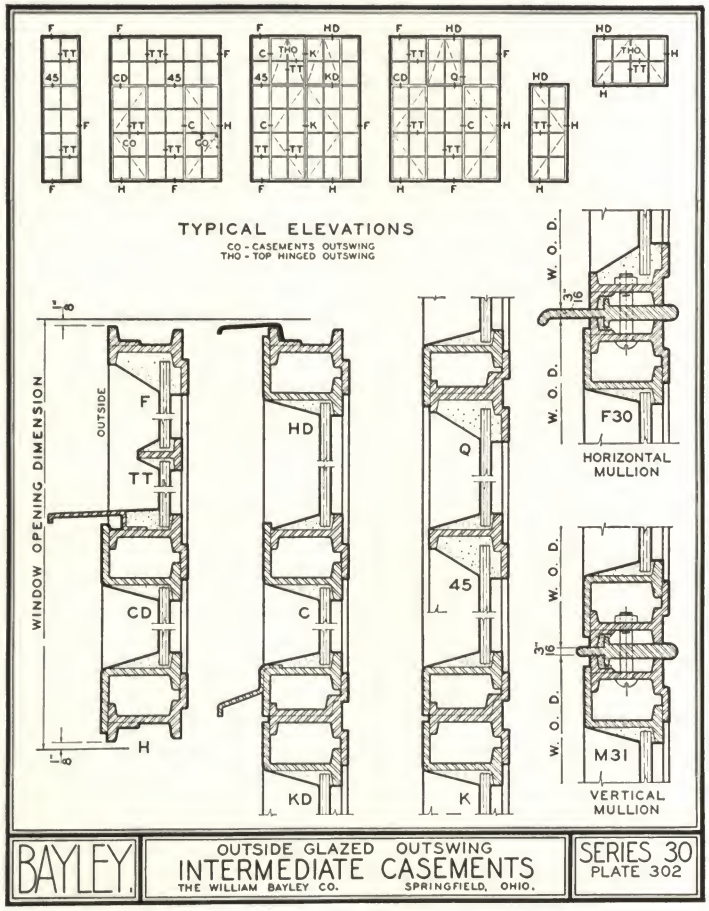
Hardware is through-the-sill stays for opening, holding, and closing and hinges are extended kinds. This extended hinge provides arm room for outside washing from the inside.

Screens flat and on the inside are removable and can be replaced with a panel of glass for insulation against outside temperatures and where air conditioning is employed.

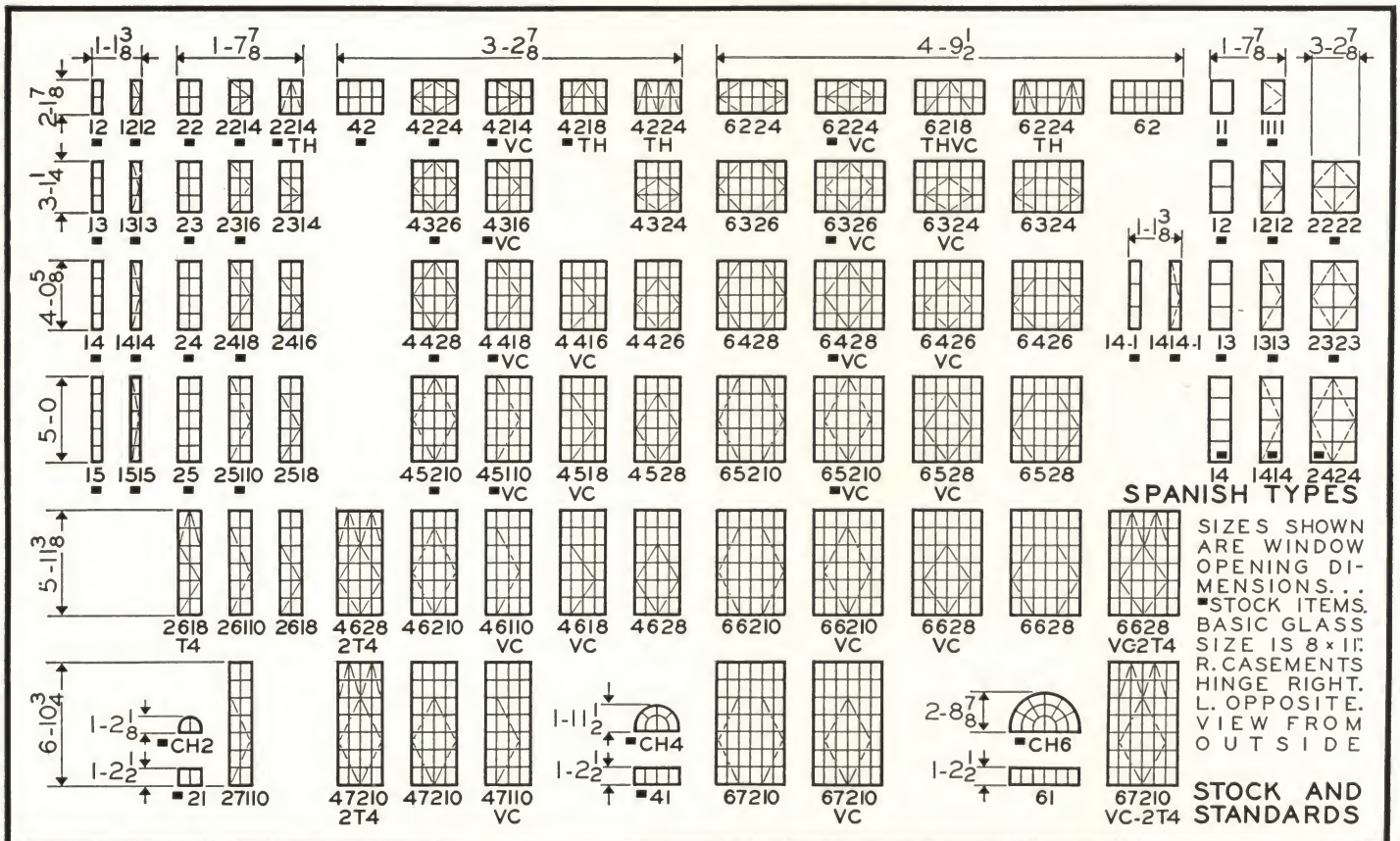


Casement Outswinging

Geared Underscreen Operator
H115



BAYLEY. OUTSIDE GLAZED OUTSWING INTERMEDIATE CASEMENTS THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. SERIES 30 PLATE 302



INTERMEDIATE CASEMENT OUTSWING SERIES 30 287

THE WILLIAM BAYLEY CO., SPRINGFIELD, OHIO

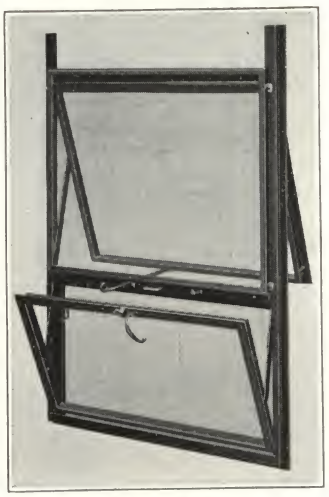
SERIES 30 CASEMENTS PROJECTED — *Screened*

Ventilators to move out and down, and in and up, are a domestic development. These movements insure unusual service and weathering, especially for casements of Series 30 sections and in combination with the Bayley developed adjustable friction arms and shoes. Series 30 steel contact sections 1⅝" deep, and the originality they express meet all the conditions of casements of this kind. Corners are welded and ground as in outswinging. Page 4.

Supporting arms are heavy and arranged to hold casements firmly. The sliding friction pivot shoes are of bronze machined and are adjustable. They top the list in casement hardware.

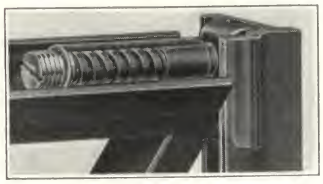
Projected out ventilators have screens inside and bronze through-screen operator H87. Projected in ventilators have screens outside and bronze handle H81.

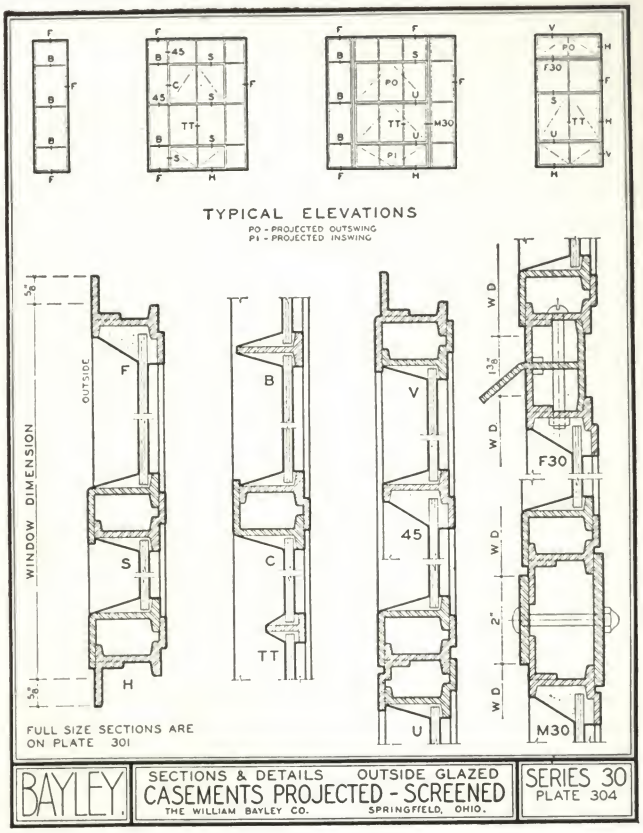
SLIDING FRICTION PIVOT welded to projected "out" and "in" ventilators. Constant friction is maintained by heavy helical spring and machined adjusting screw. Working parts protected against paint and dirt.

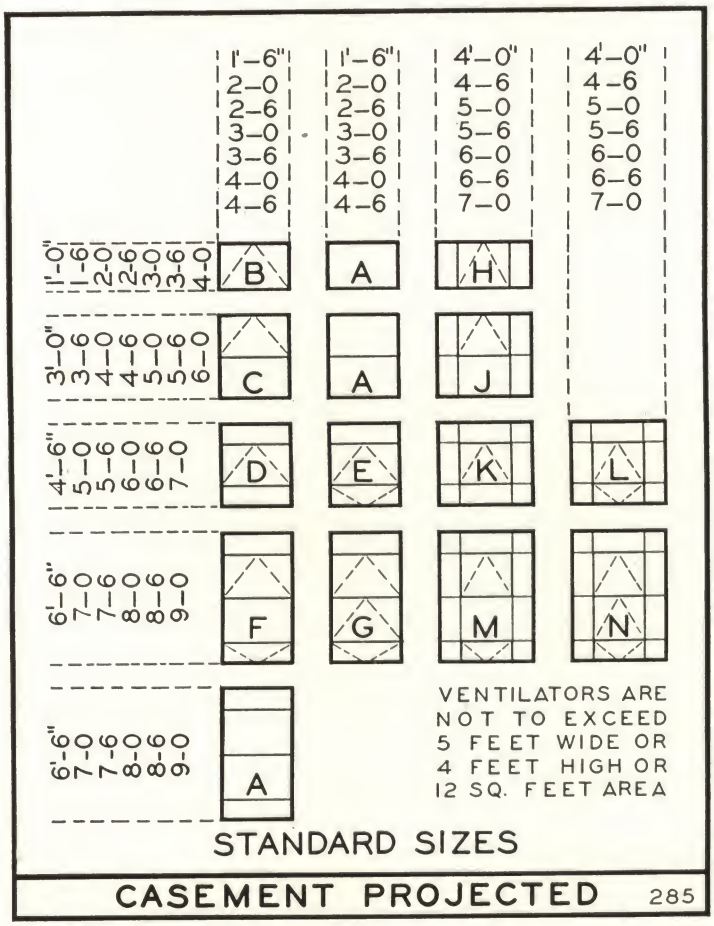


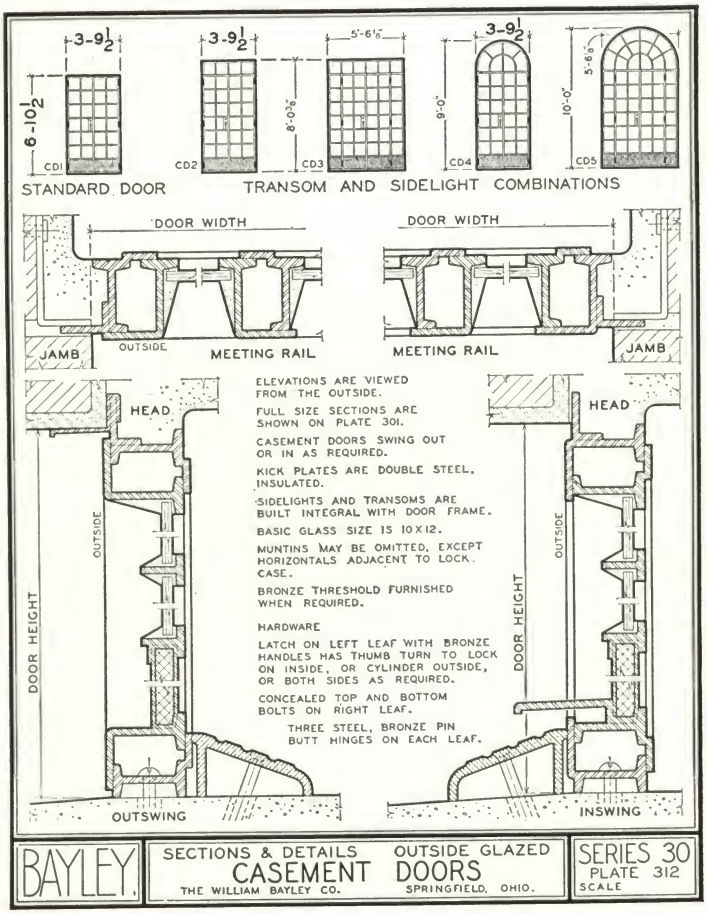
Projected Out Ventilator.
Screen Inside.
Through screen operator H 87.

Projected In Ventilator.
Screen Outside. Handle H 81.









THE WILLIAM BAYLEY CO., SPRINGFIELD, OHIO

BAYLEY GUARD WINDOWS—*Screened*

bring together in a single unit both the window and the guard. Another Bayley development universally accepted. The first move in generations to let more light into prisons, atmosphere is purified, and wardens notice that more daylight, better ventilation, and freedom from cage-like appearing windows favorably affects confined persons. This freedom from a shameful past also has architectural merit.

For maximum and medium detention, Bayley offers three treatments as follows:

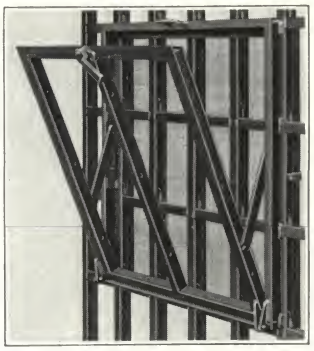
(a) The guard portion of Bayley super bar tool resisting and non-annealable steel *{see second paragraph following}*.

(b) The guard portion of Bayley super bar mild steel.

(c) The guard portion of Bayley intermediate bar mild steel.

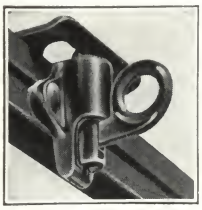
All three products have horizontal and vertical muntins continuous

{Continued on page 7}

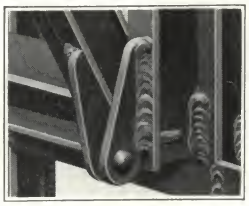


Assembly Showing Guard, Screen and Ventilator Welded Combination

Hinges, arms and hardware are heavy in keeping with this product.

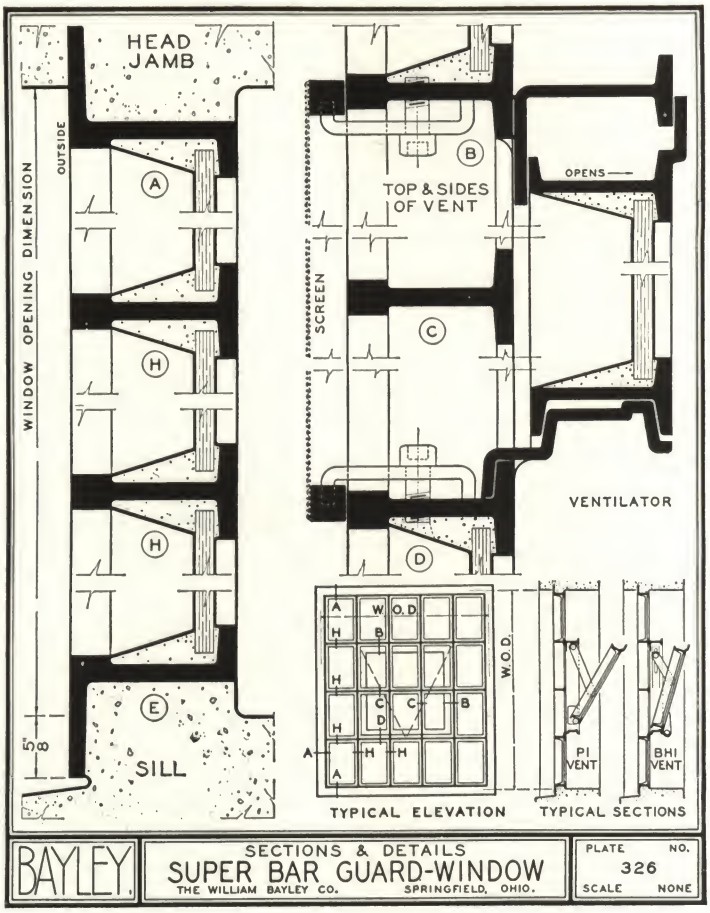


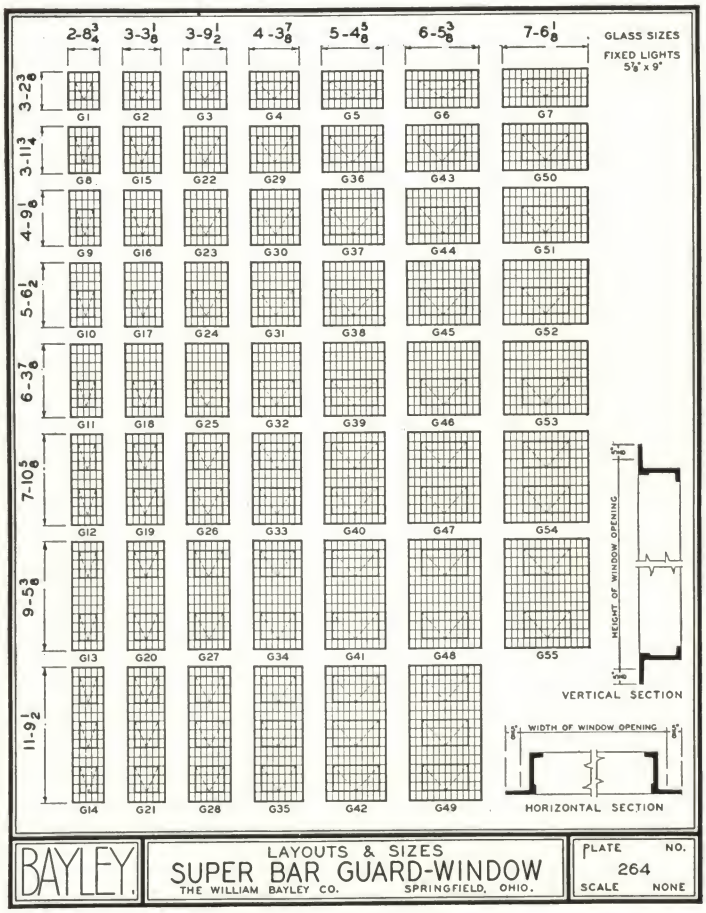
Spring Catch H 106

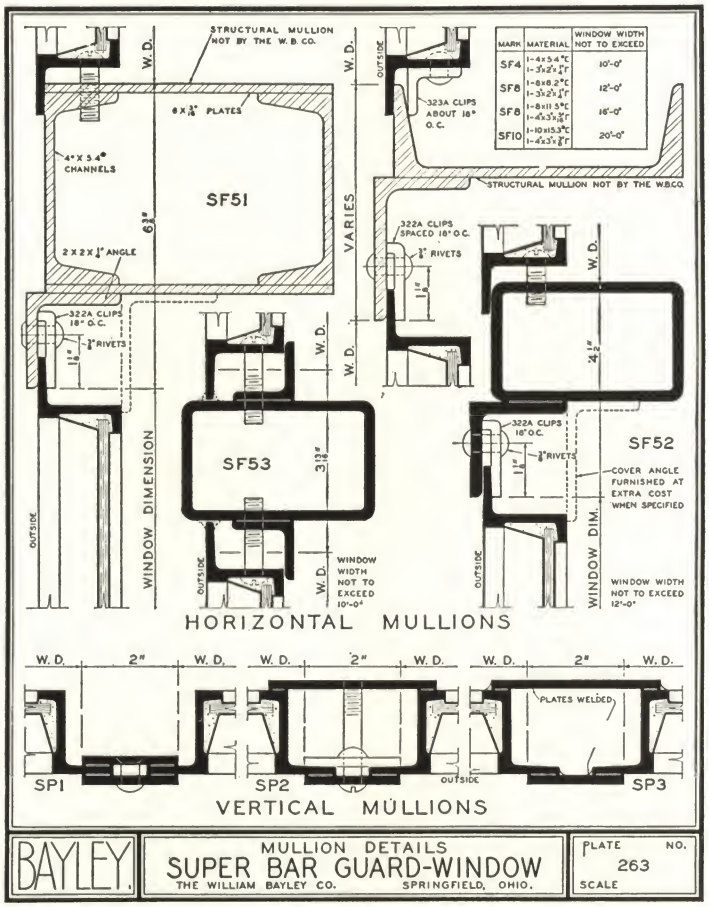


Hinge Welded to Frame

Cam H 82







BAYLEY SERIES 30 CONTACTS PARALLEL GLASS FACE

BAYLEY GUARD WINDOWS—*Screened*

from jamb to jamb and from head to sill. The ends of bars and intersections are mechanically fitted, riveted, and deep welded.

Bayley offers tool-resisting qualities put into super bars but recommends instead reinforcing with continuous non-machined horizontal and vertical square and flat non-annealable steel bars run through and welded to mild steel super bars. Bayley construction conceals such reinforcing while the increased weight and section area increases resistance against mob rushes and gives additional resistance to withstand twisting strains. Windows so reinforced with tool-resisting steel merit a detention rating of maximum plus.

Unit Showing Ventilator and Screens

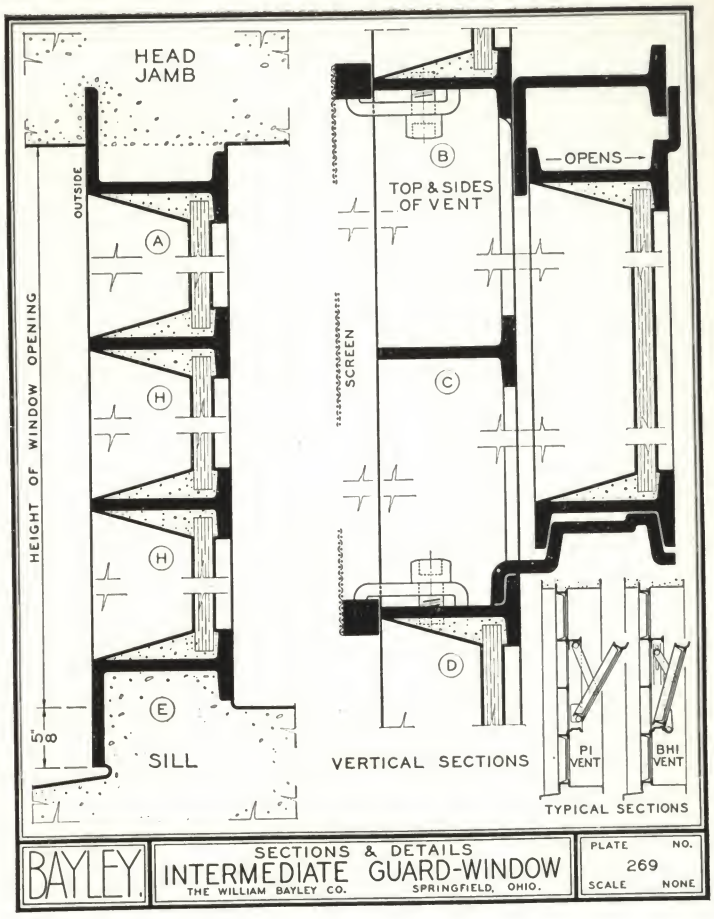
Ventilators superimposed on the inside of the guard are the same for all three products. They are casements of Series 30 sections 1 5/8" deep with double flat contacts parallel to glass face.

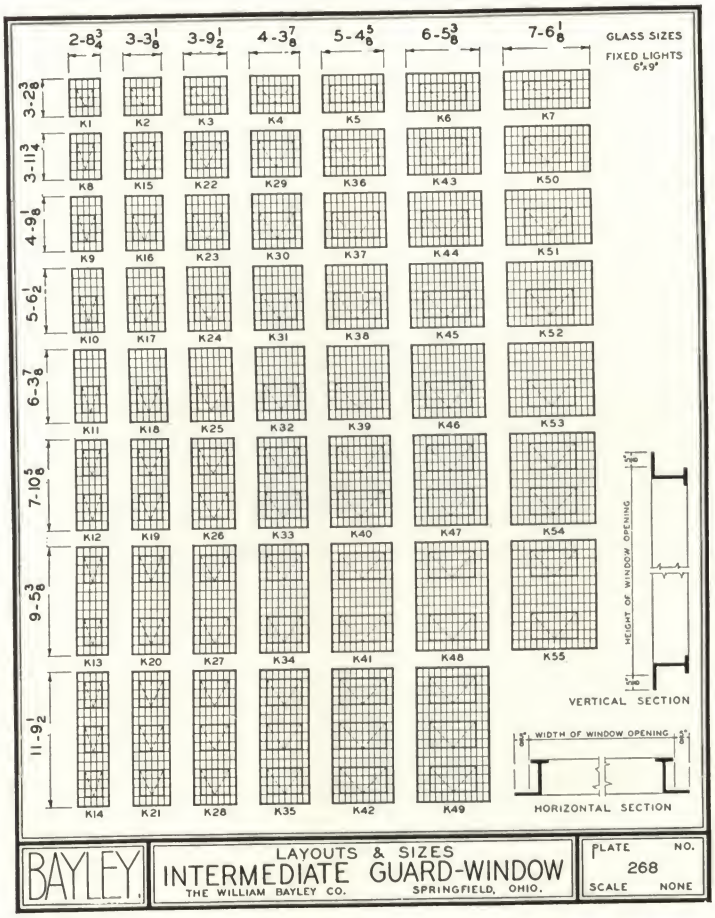
Heavy hinges liberally welded at bottom corners are standard and more rigid than a substitution of projected ventilator mechanism.

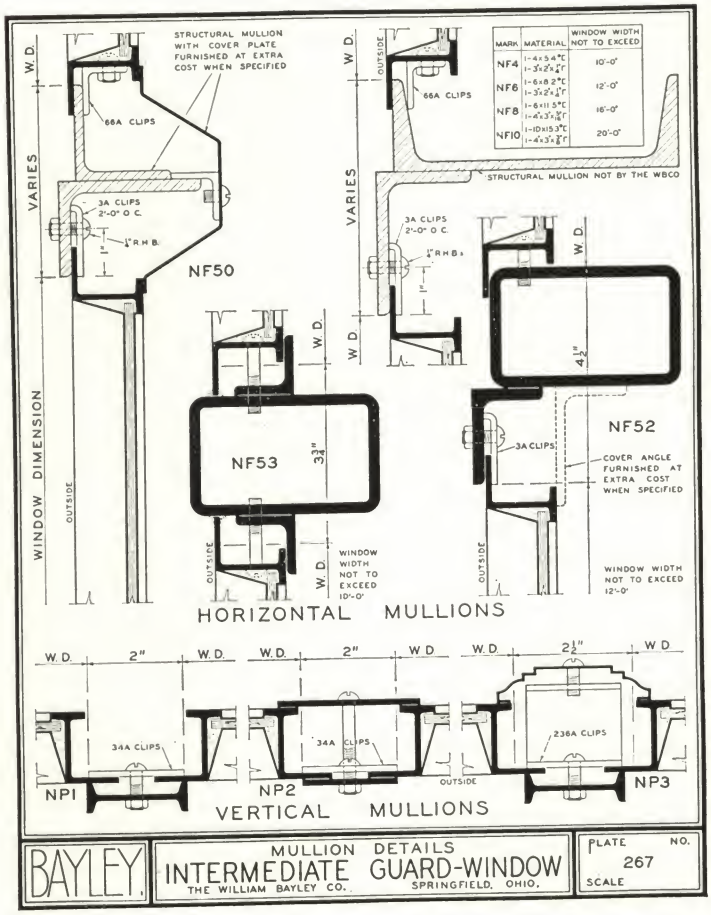
Heavy side friction stays 1" x 1/4" fold within the weathering. Such size and weight is the minimum essential for rough prison usage. Heavy pressed steel catch or cast cam also manufactured by Bayley is in harmony with these prison products.

Screens with solid steel frames butt welded at corners are placed outside of the guard or between guard and casement. The latter is recommended.

Bayley men trained in prison and detention hospital window problems will advise with architects, wardens and managing boards. Such service is without obligation and of most value when rendered early. It is reasonable to believe those who have conceived such an advanced thought as expressed in guard window construction, developed it and established its merit before the public at large, are best qualified to perform dependable assistance when buildings for detention are being planned.







BAYLEY SECURITY WINDOWS—*Screened*

usually placed in buildings for protection from the outside.

A stock product in steel recommended for reasonable protection with economy. Do not use this window for detention.

The grille of industrial sections 1½″ deep and Bayley exclusive interlocked joints guarantee better protection from outside entrance than those of less depth and less effective jointing. Glass base 5 13/16″x18″.

Ventilators are large superimposed, hinge at bottom, swing in. This Bayley standard in place of projected ventilator mechanism is better protection.

Screens with solid frames drop into position between grille and ventilator. An exclusive feature.

Security Window. Applied ventilator inside. Screen between ventilator and grille.

BAYLEY PROTECTION WINDOWS—*Screened*

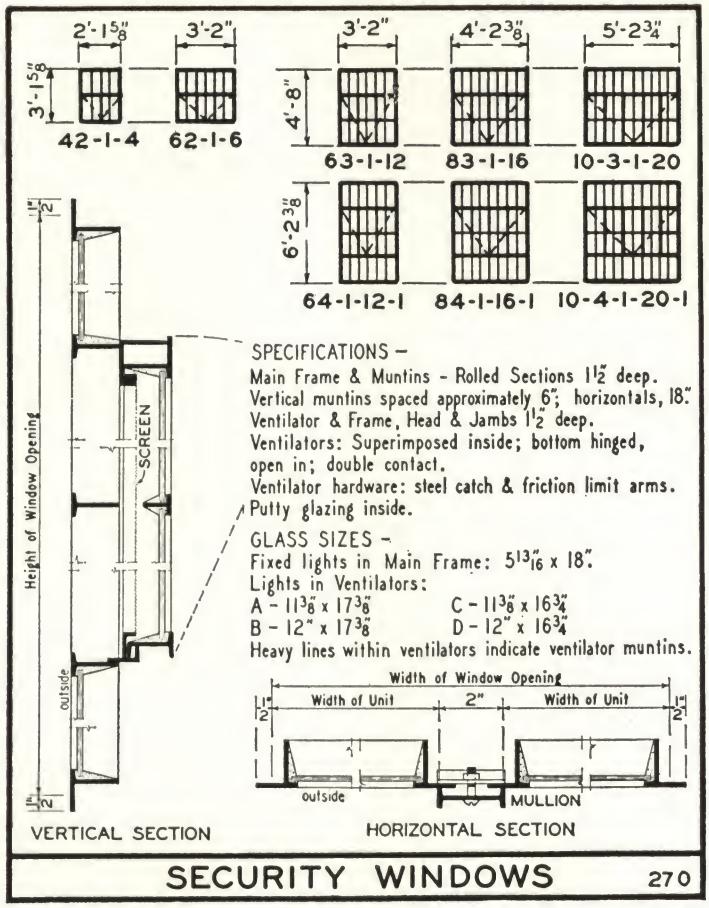
another steel product of industrial sections for protection. The grille portion, except for double the number of horizontal muntins, duplicates that of the security window. Smaller ventilators hinge in. Both features increase appearance and protection values.

Not intended for detention, even though glass base 6″ x 9″, arrangement of members in grills and ventilator appear similar to guard windows. Pages 6-7.

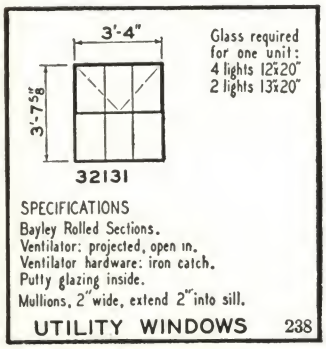
BAYLEY INDUSTRIAL DETENTION WINDOWS

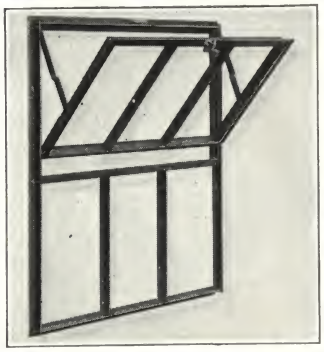
of steel with or without screening features, is in construction the horizontal pivoted window, "pages 9-10-11," with glass base 6″ x 9″. Ventilators operate through the unit and can be of the center pivoted screened kind. Pages 12-13.

This product was used before Bayley developed guard windows {pages 6-7}. Therefore, the name and offering for detention. As a product it is no stronger than the protection window above. Its use, if for detention, should be limited to where requirements are very minimum, behind prison walls where supervision is rigid and confined persons lack opportunity to work upon the windows.



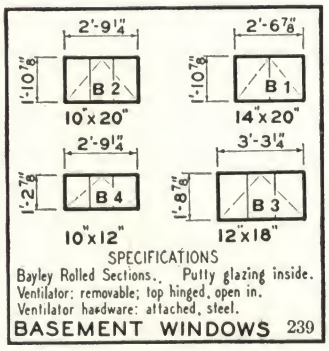
BAYLEY UTILITY WINDOWS

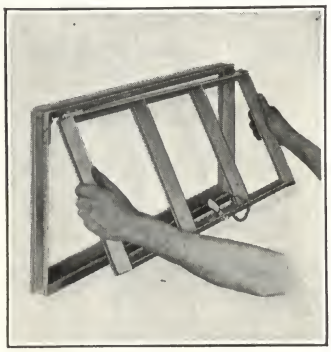




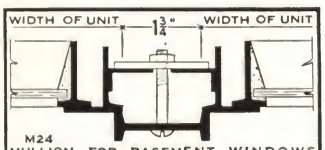
Are companion products to pivoted and projected windows. In stock of steel. Wrought iron on special order. Ventilators project in. Sections 1½″ and 1⅝″ deep. Iron catch hardware standard. Used on lot lines or where outside projections are objectionable. This product may be screened with Bayley screens.

BAYLEY BASEMENT WINDOWS





For residential purposes. In stock of steel. Wrought iron on special orders. Sections 1½″ make these units especially rigid. Ventilators are top pivoted to swing in. Pivot construction permits easy removal of ventilator for glazing. Bayley screens may be furnished. Special mullions M-24, for vertical attachment of more than one unit in an opening. Details shown at right and below.



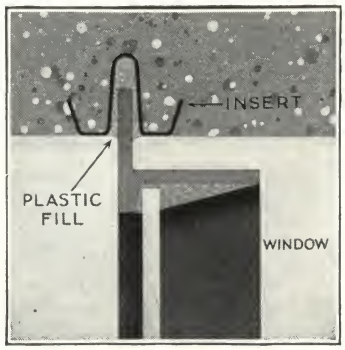
Vertical Mullion M 24.

BAYLEY STEEL WINDOW INSERTS

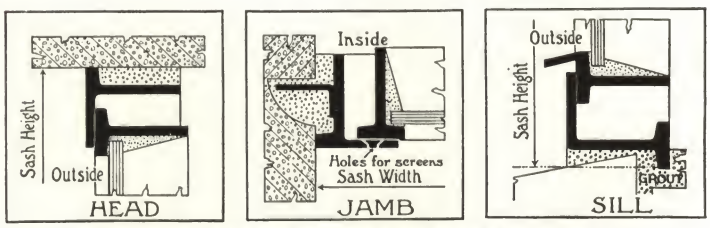
for buildings of concrete construction and finish, or of concrete frame faced with brick.

Inserts are of galvanized rust resisting armco ingot iron providing recesses in jambs and heads of openings for steel windows. They nail to the forms. Recesses are filled with natural colored mastic. Requires no additional caulking.

Window erection at any temperature, glazing follows immediately. General construction speeded up.



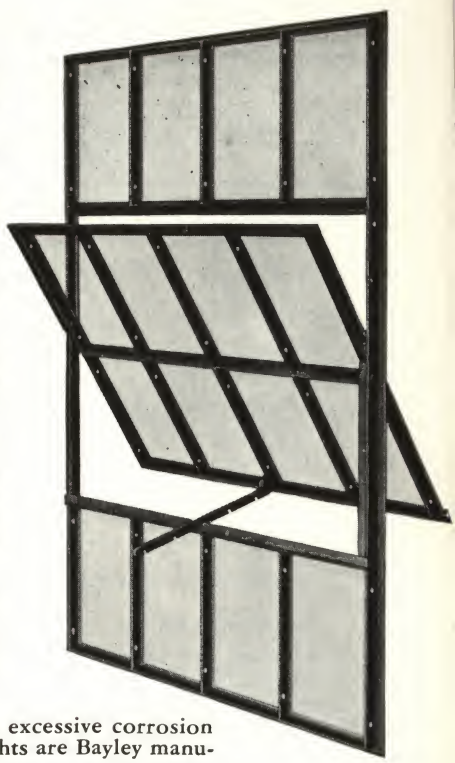
Insert, concrete and window.



Bayley Basement Window Installation Details

THE WILLIAM BAYLEY CO., SPRINGFIELD, OHIO

BAYLEY PIVOTED WINDOWS



are for sidewalls of factories, warehouses, garages, lofts, power houses and other kinds of industrial buildings. They are used in the sides of monitors and in vertical sawtooth construction. Continued progress since Bayley began to manufacture windows of specially rolled shaped bars in 1909 is represented in this basic product.

EXPERIENCE OF 26 YEARS have resulted in many refinements and improvements in this and other Bayley products, so that they represent today's best window practice.

PIVOTED WINDOWS are of new billet mild steel, wrought iron or aluminum sections designed for strength, easy fabrication, permanence, and low cost maintenance. They are without sharp edges which encourage corrosion. Their flat surfaces are easily painted.

PIVOTED WINDOWS have a deep angle frame, of a size sufficient to provide ½″ engagement at head, jambs and sill in all wall constructions. Basic glass size is 12 x 18″ and 14 x 20″. Glass in ventilator is trimmed 1″ at perimeter.

INTERIOR BAR IS T SHAPED and is a characteristic Bayley section, with a flange containing no greater amount of metal than its web and a depth of 1½″. This dimension in Bayley windows is the basis of exclusive features such as screening, double glazing, hardware, etc. It provides space for a tenon of extra size, which, when driven, makes a tight and permanent joint. It allows space for bed and face putty and either ⅛″ or ¼″ glass.

INTERSECTION OF INTERIOR bars is accomplished by threading the vertical through horizontal bar. Horizontal bar is punched in web. Vertical bar is punched in flange. After assembly, a wedge is driven at intersection, making entire construction rigid. Bars are not bent or manipulated in assembly. This construction provides strength almost equal to the original bar. Disinterested, exhaustive laboratory and usage tests prove this construction completely outclasses all competition and withstands high wind pressure without permanent deflection.

WEATHERING AT HINGE is provided by lapping upper weathering on ventilator over lower weathering on fixed portion of window. Ventilator contacts are close fitting. Vertical contacts are cold rolled. Horizontal contacts are one-piece rolled sections integral to ventilator and unit and are 1⅝″ deep.

Hinge pivot is 3″ above center of ventilator. It is contained within contact members and does not project beyond faces of window, a protection against damage in shipment. Hinge may be adjusted by regulating two substantial bolts.

Use wrought iron or hot dip galvanized on steel, or even hot dip galvanized on wrought iron where excessive corrosion hazards exist. METALLIC OPERATORS acquired from the St. Louis Company, under exclusive rights are Bayley manufacture. This product stands alone in design, liberal use of cut gears and racks, bronze bushings and precision in manufacture.

Much of the above directly refers to horizontal pivoted windows. Slight modifications cover other methods of ventilating, including vertically center pivoted, bottom and top pivoted, and camber and semi-circular units. Double glazing, underwriters labelled units, and vertical and horizontal mullions apply alike to all windows mentioned in this paragraph.

Double glazing the Bayley way is an exclusive feature, essential in industries where constant temperature and humidity must be preserved and where fuel saving is considered. Double glazing in each glass space is accomplished with galvanized separators 2″ long, which provide ⅜″ or ½″ clear space between two lights of glass. Bed putty is applied, outside light of glass inserted followed by double glazing separators, inside light of glass follows separators and is held in place by glazing springs. Face putty is applied for finish.

HARDWARE

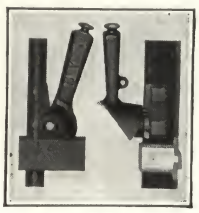
for industrial windows is Bayley design and manufacture. Heavy pressed steel and Malleable iron is generally used. Cams are cast malleable. Center pivoted ventilators may have lock bars, catch and chain, corner cams with push bar, or chain cams.

Lock Bar F.

Cam H.

Concealed Hinge.

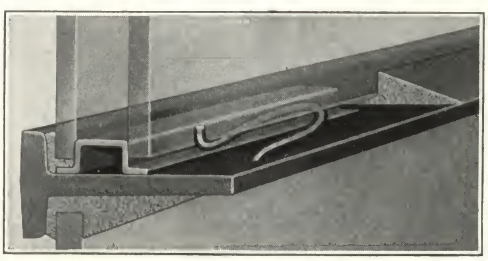
Chain Set N.

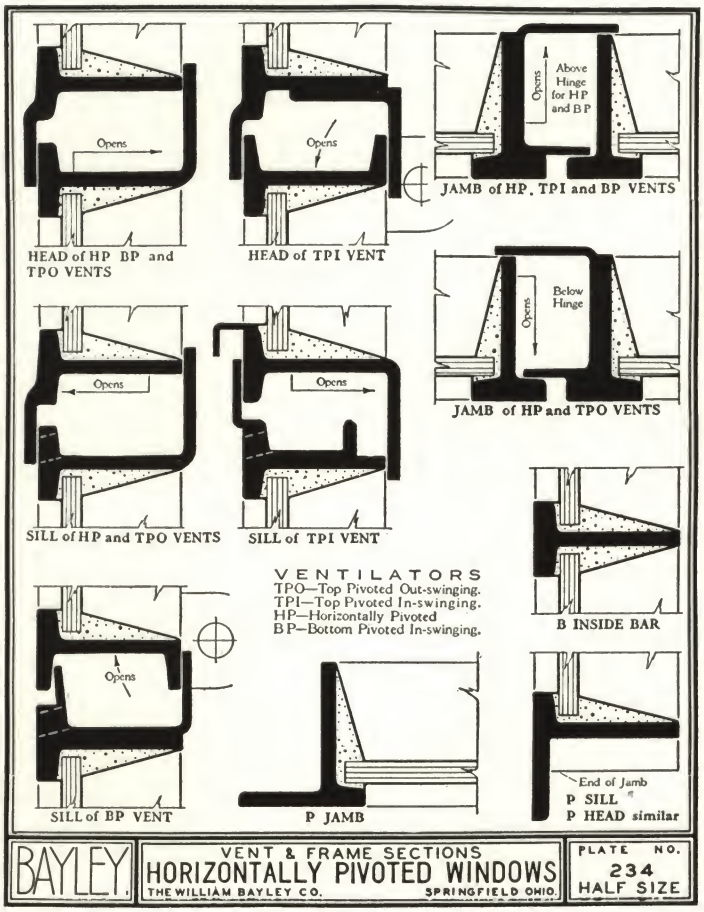


Cam H 15.

DOUBLE GLAZING

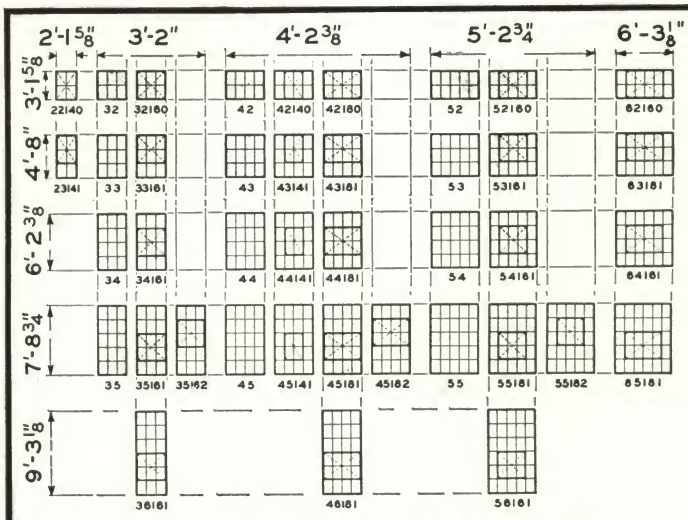
BAYLEY WINDOWS carry enormous areas of double glazing where constant humidity and temperature is desired. This exclusive Bayley construction pays for itself by reducing heating costs.



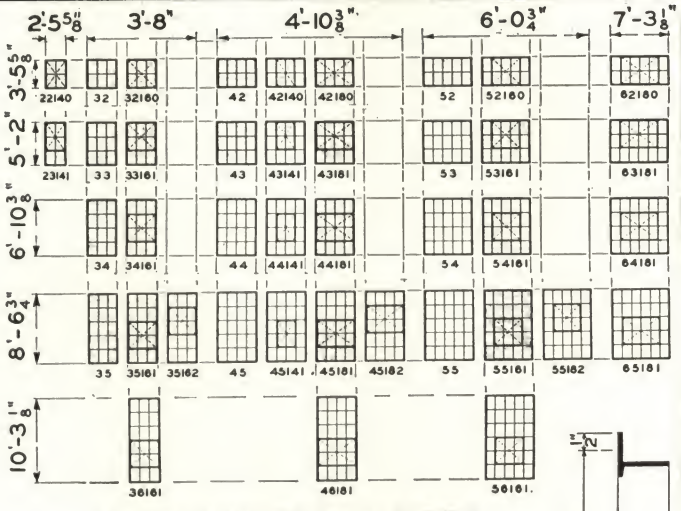


THE WILLIAM BAYLEY CO., SPRINGFIELD, OHIO

BAYLEY PIVOTED WINDOWS



12 x 18 LAYOUTS AND SIZES



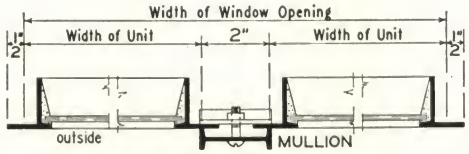
14 x 20 LAYOUTS AND SIZES

SPECIFICATIONS

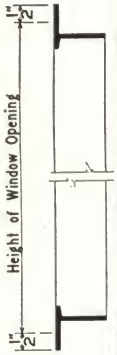
All units viewed from outside.
Rolled Sections 1½" deep.
Ventilator heads & sills 1⅝" deep.
Double contact weathering.
Ventilators pivoted 3" above center.
Hinge: protected within weathering.
Putty glazing inside.
Glazing springs: 4 per light.
Mullions, 2" wide, extend 2" into sill.
Window anchorage clips furnished when specified.

SHADED UNITS ARE DEALERS STOCK.

12"x18" GLASS SIZE IN FIXED PORTION. GLASS IN VENTS AT EDGES (TOP, BOTTOM & BOTH SIDES) MUST BE TRIMMED ONE INCH.

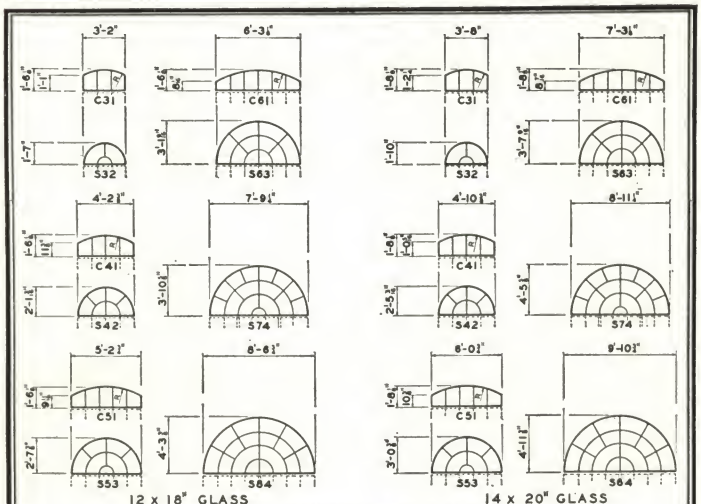


HORIZONTAL SECTION

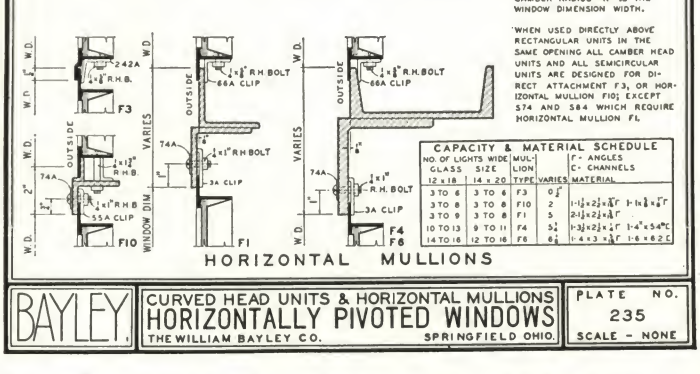


VERTICAL SECTION

HORIZONTALLY PIVOTED WINDOWS 236



CAMBER AND SEMICIRCULAR UNITS



HORIZONTAL MULLIONS

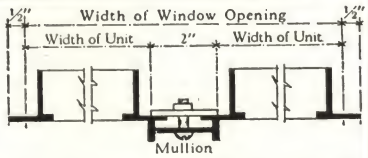
CAMBER RADIUS "R" IS THE WINDOW DIMENSION WIDTH.

*WHEN USED DIRECTLY ABOVE RECTANGULAR UNITS IN THE SAME OPENING ALL CAMBER HEAD UNITS AND ALL SEMICIRCULAR UNITS ARE DESIGNED FOR DIRECT ATTACHMENT F3, OR HORIZONTAL MULLION F10; EXCEPT S74 AND S84 WHICH REQUIRE HORIZONTAL MULLION F1.

CAPACITY & MATERIAL SCHEDULE

NO. OF LIGHTS WIDE GLASS SIZE 12 x 18	NO. OF LIGHTS WIDE GLASS SIZE 14 x 20	MULLION TYPE	MULLION VARIES	MATERIAL L- ANGLES C- CHANNELS
3 TO 4	3 TO 6	F3	0"	
3 TO 8	3 TO 8	F10	2	L-1½x2½x⅛" L-1½x3"x⅛"
3 TO 9	3 TO 8	F1	5	2-L3½x2½x⅛"
10 TO 13	9 TO 11	F4	5½	L-3½x2½x⅛" L-4"x5.4#C
14 TO 16	12 TO 16	F6	6½	L-4x3x⅛" L-6x8.2#C

BAYLEY | CURVED HEAD UNITS & HORIZONTAL MULLIONS HORIZONTALLY PIVOTED WINDOWS THE WILLIAM BAYLEY CO. SPRINGFIELD OHIO. | PLATE NO. 235 SCALE – NONE

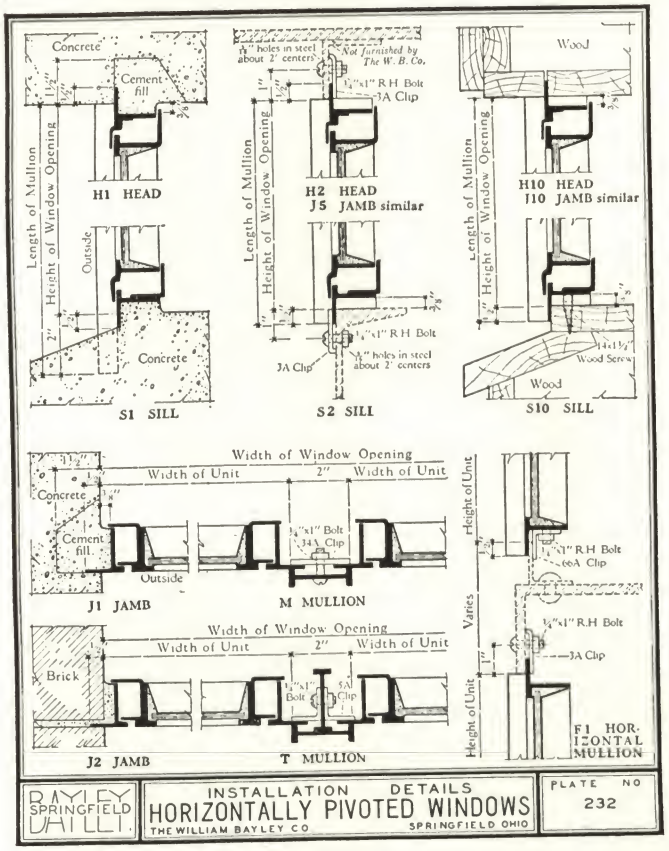


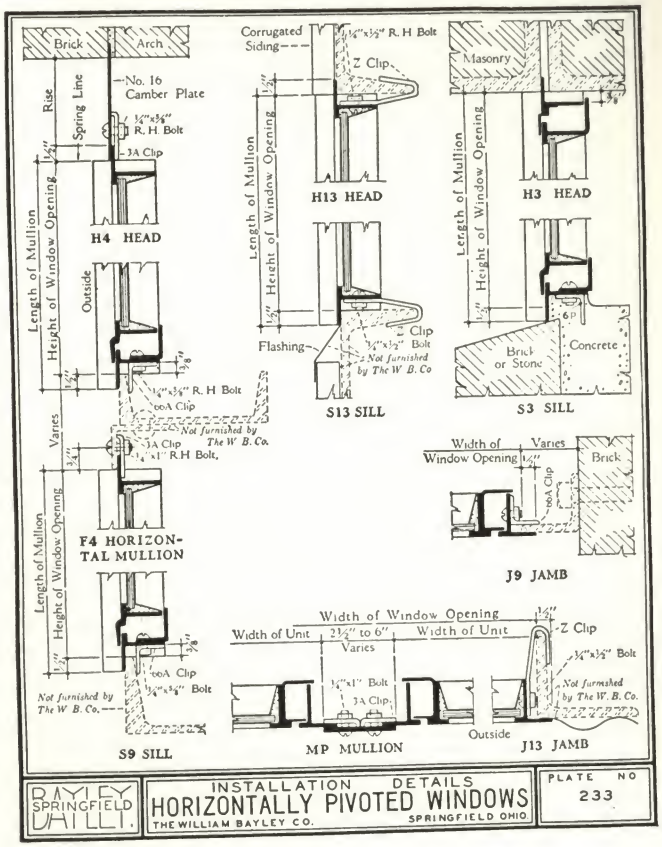
12"x 18" Height Window Openings	14"x 20" Height Window Openings	No. of Lights High
1' 7¼"	1' 9¼"	1
3' 1⅝"	3' 5⅝"	2
4' 8"	5' 2"	3
6' 2⅜"	6' 10⅜"	4
7' 8¾"	8' 6¾"	5
9' 3⅛"	10' 3⅛"	6
10' 9½"	11' 11½"	7

12"x 18" Width of Window Opening	14"x 20" Width of Window Opening	No. Lights Wide	No. Units in Opening	1st Unit	2nd Unit	3rd Unit	4th Unit	5th Unit	No. of Mullions
2' 1⅝"	2' 5⅝"	2	1	2					
3' 2"	3' 6"	3	1	3					
4' 2⅜"	4' 10⅜"	4	1	4					
5' 2¾"	6' 0¾"	5	1	5					
6' 3⅛"	7' 3⅛"	6	1	6					
6' 6"	7' 6"	6	2	3	3				1
8' 6¾"	9' 10¾"	8	2	4	4				1
8' 9⅝"	10' 1⅝"	8	3	3	2	3			2
8' 9⅝"	10' 1⅝"	8	3	2	4	2			2
9' 10"	11' 4"	9	3	3	3	3			2
10' 7⅛"	12' 3⅛"	10	2	5	5				1
10' 10⅜"	12' 6⅜"	10	3	3	4	3			2
11' 10¾"	13' 8¾"	11	3	3	5	3			2
12' 8⅛"	14' 8⅛"	12	2	6	6				1
12' 11⅝"	14' 11⅝"	12	3	4	4	4			2
13' 2"	15' 2"	12	4	3	3	3	3		3
13' 11½"	16' 1½"	13	3	5	3	5			2
13' 11½"	16' 1½"	13	3	4	5	4			2
14' 11⅞"	17' 3⅞"	14	3	5	4	5			2
15' 2⅜"	17' 6⅜"	14	4	3	4	4	3		3
16' 0⅛"	18' 6⅛"	15	3	5	5	5			2
16' 6"	19' 0"	15	5	3	3	3	3	3	4
17' 0⅝"	19' 8⅝"	16	3	6	4	6			2
17' 0⅝"	19' 8⅝"	16	3	5	6	5			2
17' 3½"	19' 11½"	16	4	4	4	4	4		3
17' 3½"	19' 11½"	16	4	3	5	5	3		3
17' 6⅜"	20' 2⅜"	16	5	3	3	4	3	3	4
18' 1"	20' 11"	17	3	6	5	6			2
18' 6¾"	21' 4¾"	17	5	4	3	3	3	4	4
18' 6¾"	21' 4¾"	17	5	3	3	5	3	3	4
19' 1⅜"	22' 1⅜"	18	3	6	6	6			2
19' 4½"	22' 4½"	18	4	4	5	5	4		3
20' 7⅛"	23' 9⅛"	19	5	5	3	3	3	5	4
20' 7½"	23' 9½"	19	5	4	3	5	3	4	4
21' 5"	24' 9"	20	4	5	5	5	5		3
21' 7⅜"	24' 11⅜"	20	5	4	4	4	4	4	4
22' 8⅛"	26' 2⅛"	21	5	3	5	5	5	3	4
22' 8½"	26' 2½"	21	5	4	5	3	5	4	4

BAYLEY | WINDOW OPENING SIZES HORIZONTALLY PIVOTED WINDOWS THE WILLIAM BAYLEY CO. SPRINGFIELD OHIO. | PLATE NO. 231 SCALE – NONE

BAYLEY PIVOTED WINDOWS

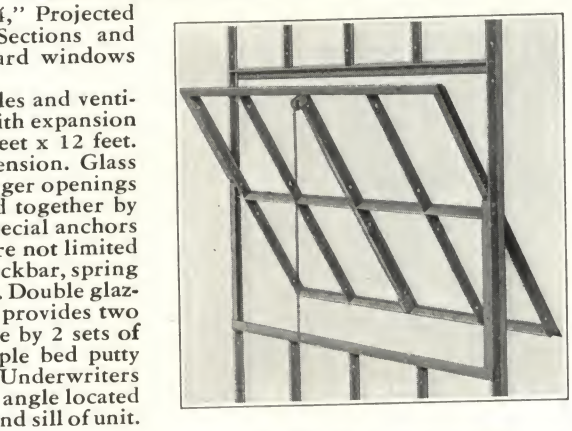


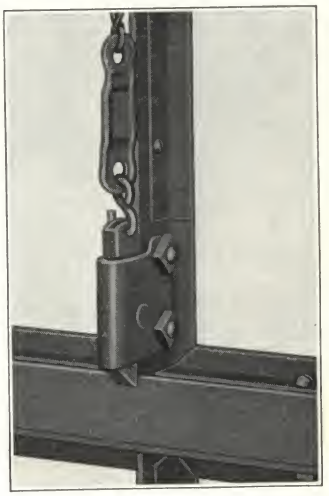


BAYLEY PIVOTED WINDOWS—UNDERWRITERS LABELLED

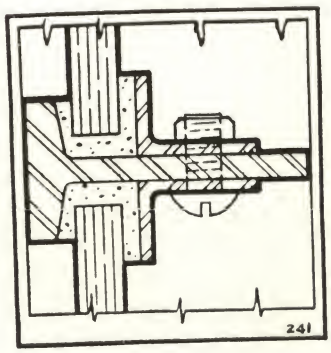
include those with horizontal pivoted ventilators at the center and at the top, "Pages 9-10-11," Pivoted Windows Screened "Pages 12-13," Projected Windows Commercial "Page 14," Projected Windows Architectural "Page 15." Sections and details duplicate those of these standard windows with the following exceptions.

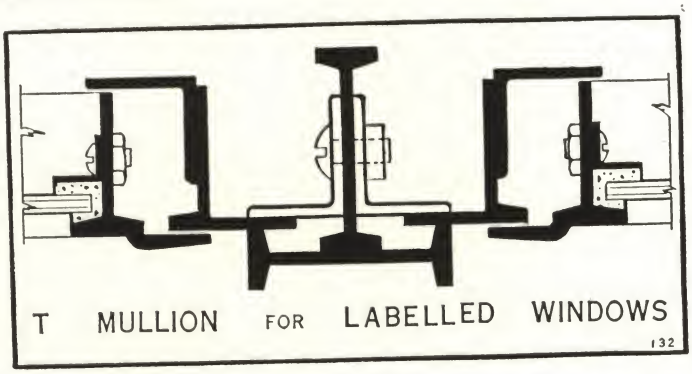
Glass is held in place by glazing angles and ventilators are equipped at heads and sills with expansion clips. Window units are limited to 7 feet x 12 feet. Width and height may be either dimension. Glass size is limited to 350 square inches. Larger openings are made up of several units connected together by approved T mullions. Mullions have special anchors at heads and sills. Window openings are not limited to any width. Hardware may be either lockbar, spring catch and chain, or cam H 15 and chain. Double glazing may be had in these windows and provides two lights in each glass space, held in place by 2 sets of glazing angles. It is essential that ample bed putty be used to insure a watertight job. Underwriters label is placed on inside face of glazing angle located at lower edge of fixed light near center and sill of unit.

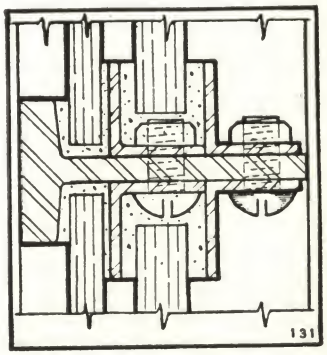




Fusible Link Chain Set A







THE WILLIAM BAYLEY CO., SPRINGFIELD, OHIO

BAYLEY PIVOTED WINDOW— *Screened*

{Patented} are for buildings requiring screen protection added to the advantages of pivoted windows, and completely protect materials and machinery in all kinds of manufacturing and distributing plants. These windows are popular where food products are handled. They should not be confused with ordinary pivoted windows to which screens have been attached as an after thought.

THIS EXCLUSIVE BAYLEY DEVELOPMENT is backed by thousands of successful installations for many particular owners. This product is made with ventilators having industrial sections, plate No. 161; or Series 30 casement sections, plate No. 313. Both products are available in steel or wrought iron, and may be hot dip galvanized.

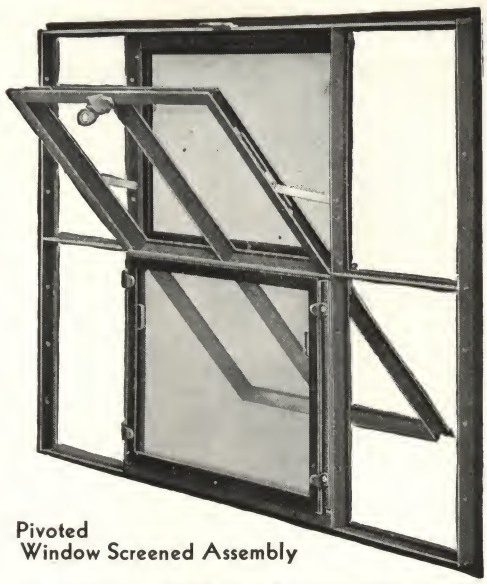
VENTILATORS AND SCREENS are built together but screens are removable.

STANDARD LAYOUTS AND SIZES are 12x18 and 14x20 inches. Opening dimensions match those of pivoted windows.

SECTIONS duplicate those of standard pivoted windows except those exclusive to this product. Horizontal muntin bar of ventilator is $1\frac{13}{16}$ inches deep and is shaped to provide continuous close fitting screen contacts with ventilator in any position.

PIVOTS exclusive to this product are located at exact center of ventilator.

FRICTION ADJUSTERS of non-corrosive metal hold ventilator securely in any position. They are attached within the weathering at each side, properly adjusted in manufacture and protected during shipment and erection.



Pivoted
Window Screened Assembly

POLE CATCH H112 IS OF MALLEABLE IRON in cadmium plated finish. Cam H 113, optional.

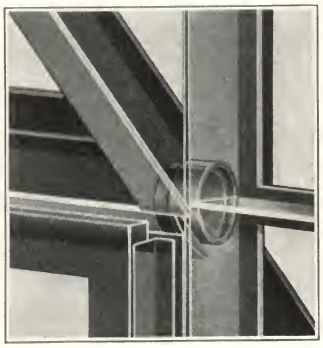
SCREENS MADE BY THE WILLIAM BAYLEY CO. are an integral part of window. They have solid steel frames in hot dip galvanized finish. Bronze screen cloth, 16 mesh, is standard. Screens are interchangeable and easily removed from inside for cleaning windows or for winter storage. Rewiring may be done by any mechanic without special tools.

GLAZING is with putty. Industrial sections windows glazed inside, series 30 glazed outside. Double glazing is an exclusive feature which may be specified in this as in other Bayley products. It is specially desirable where uniform temperature and humidity is necessary and where fuel saving is considered.

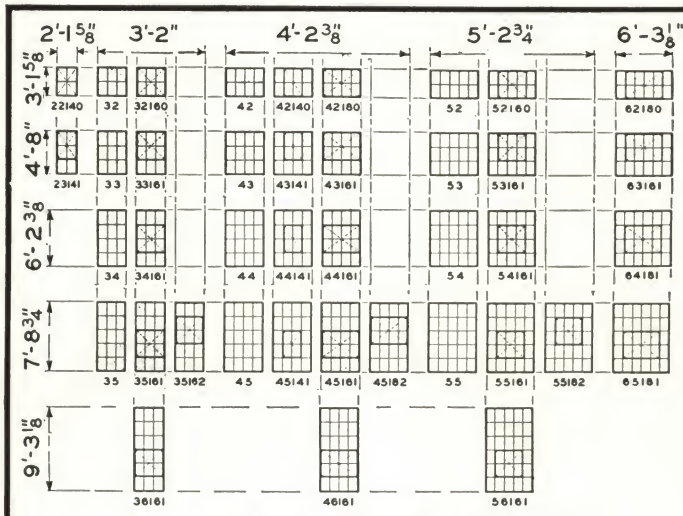
One dip coat of standard red oxide paint is applied to steel before shipment.

MECHANICAL OPERATORS of either manual or electric control may be used for ventilators in long lines and those out of reach.

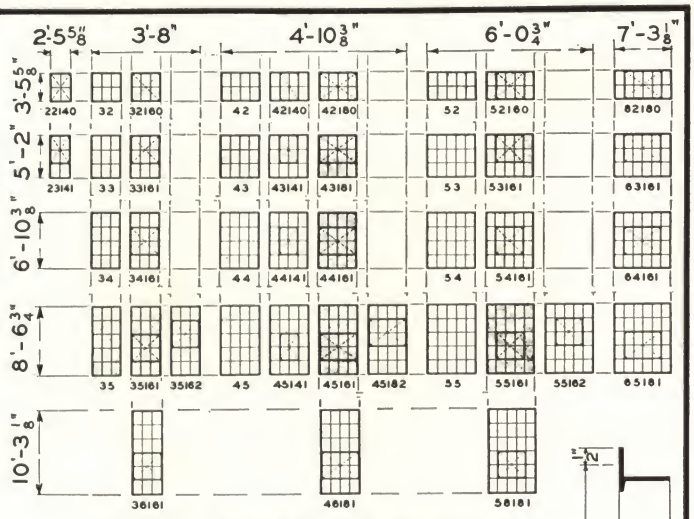
Pole Catch H 112



Center Rail and Pivot



12 x 18 LAYOUTS AND SIZES



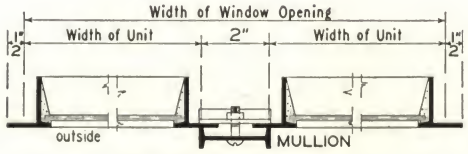
14 x 20 LAYOUTS AND SIZES

SPECIFICATIONS

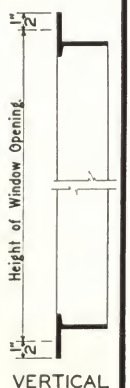
All units viewed from outside.
Rolled Sections $1\frac{1}{2}$" deep.
Ventilator heads & sills $1\frac{5}{8}$" deep.
Double contact weathering.
Ventilators pivoted on center.
Hinge: protected within weathering.
Putty glazing inside.
Glazing springs: 4 per light.
Mullions, 2" wide, extend 2" into sill.
Window anchorage clips furnished when specified.

SHADED UNITS ARE DEALERS STOCK.

12"x18" GLASS SIZE IN FIXED PORTION. GLASS IN VENTS AT EDGES (TOP, BOTTOM & BOTH SIDES) MUST BE TRIMMED ONE INCH.



HORIZONTAL SECTION



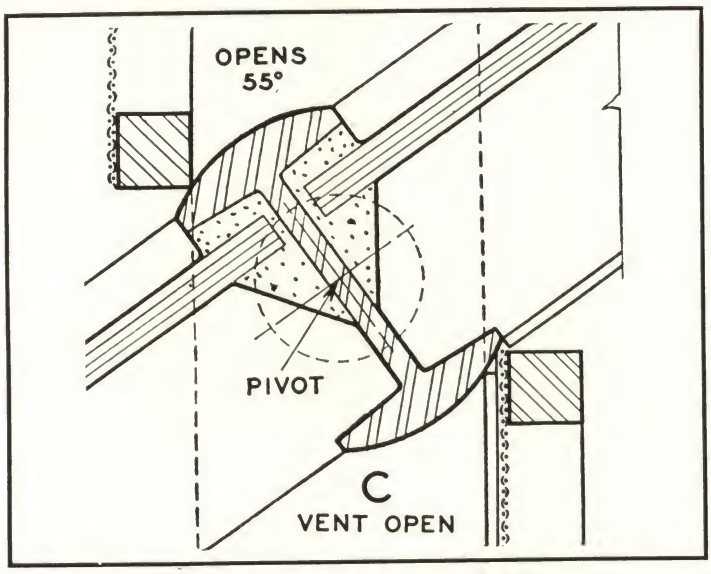
VERTICAL SECTION

HORIZONTALLY PIVOTED SCREENED WINDOWS 237

ANOTHER BAYLEY ACHIEVEMENT, AN EXCLUSIVE PRODUCT

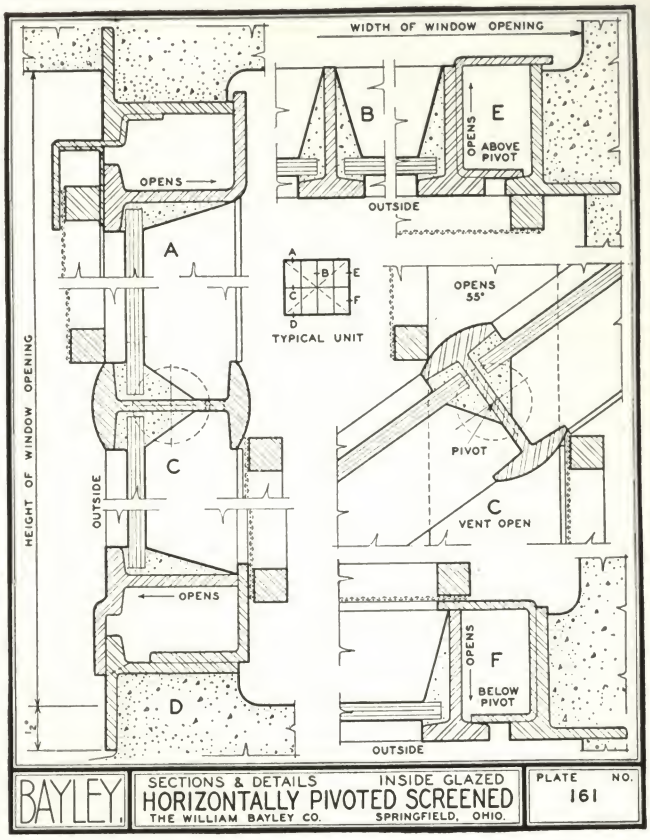
BAYLEY PIVOTED WINDOW—*Screened*

INDUSTRIAL SECTIONS GLAZED INSIDE (Patented)



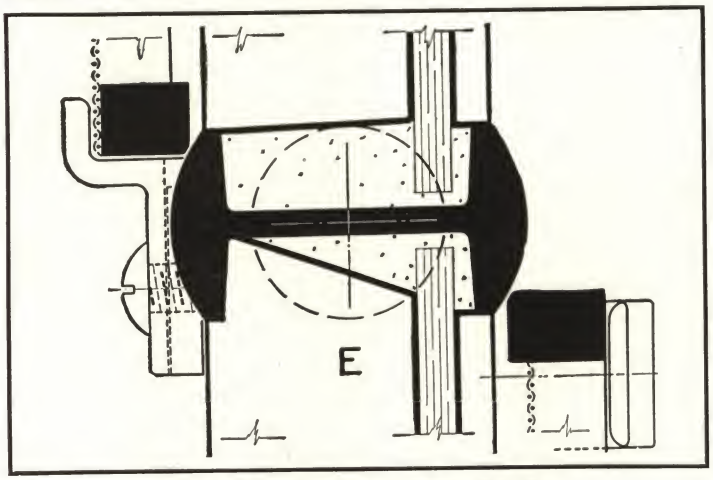
Center Rail, Contact and Pivot—Full Size

CENTER RAIL CONTACT with flat BAYLEY screens and pivot arrangement is the key to these special "keep out insects" center pivoted ventilators. Illustrations above and below show ventilators open and closed with horizontal screen frame members for narrow and wide screens always in contact with the rail. These illustrations also show inside putty glazing above, and outside putty glazing below.



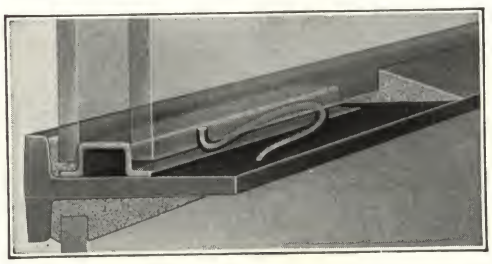
BAYLEY PIVOTED WINDOW—*Screened*

SERIES 30 CASEMENT SECTIONS—GLAZED OUTSIDE (Patented)

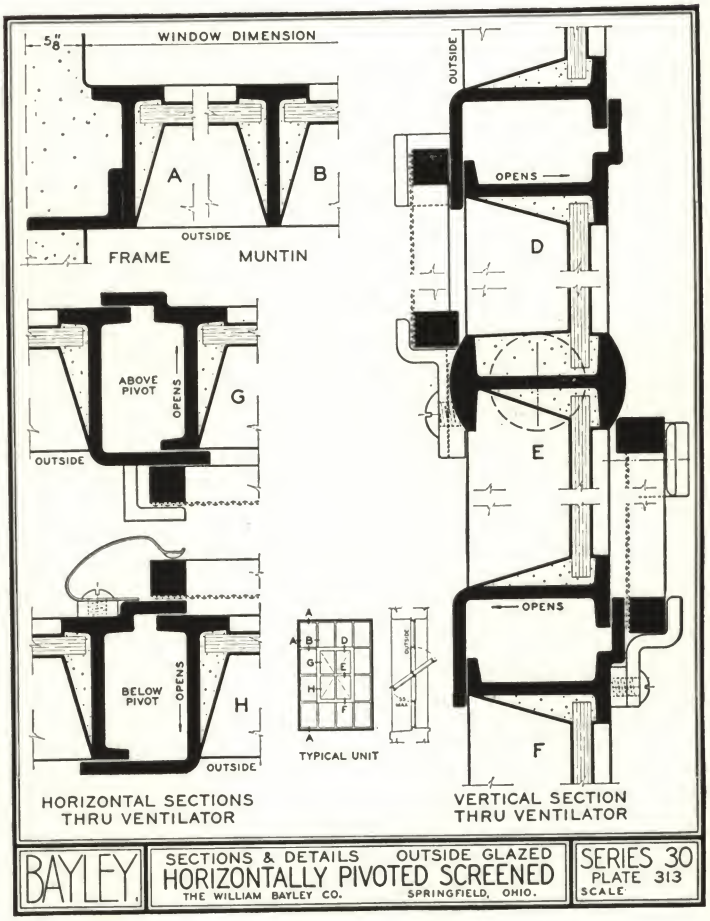


Center Rail, Contact and Pivot—Full Size

This application of series 30 casement sections ⅛ inch thick to pivoted ventilators intended for use with industrial work is another long step forward by Bayley. It assures better weathering and permanency and carries casement workmanship. Corrosion is less likely and the complete window unit is even more rigid.



DOUBLE GLAZING is applicable to both products shown on this page as it is to BAYLEY products in general.



IN STEEL, WROUGHT IRON, ALUMINUM AND BRONZE

BAYLEY PROJECTED WINDOWS COMMERCIAL — *Screened*

BAYLEY PROJECTED WINDOWS COMMERCIAL Screened for garages, lofts, storage and industrial buildings. Used in single units or in bays. Procurable in steel, or wrought iron. May also be hot dip galvanized.

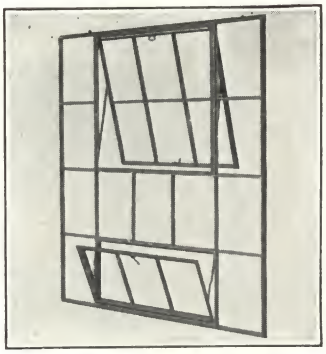
Industrial sections 1½″ and 1⅝″ deep arranged for inside putty glazing or for outside glazing upon request. Layouts are for basic glass sizes 12 x 18″ and 14x20″. Opening dimensions match those of pivoted windows.

Ventilators and openings for ventilators have corners coped, tenoned and riveted, and welded where necessary for strength. Ventilators balance on heavy steel friction arms with friction increasing as the movement nears the closing point. They slide on bronze pivots; at top when projected out, and at bottom when projected in.

Awning-like protection during showers is a feature. Outside washing can be done from the inside when ventilators are open.

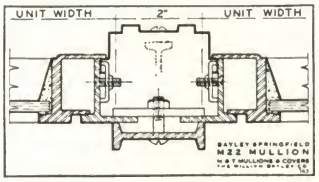
Screens fit flat against weathering. Bayley's section depth provides for secure attachment of hardware and its coverage by screens.

Furnished with underwriter's label (see page 11).



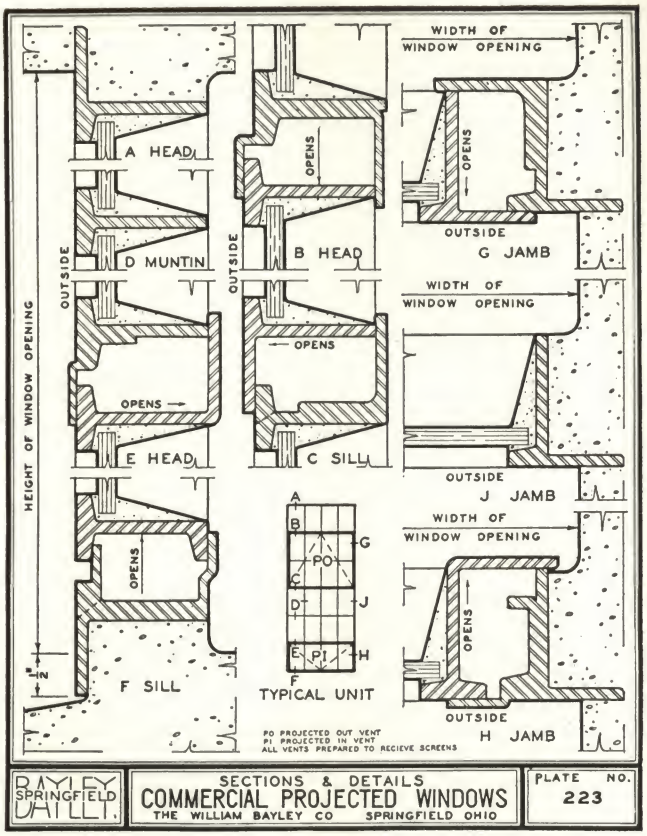
Upper ventilator projected out screen inside.

Lower ventilator projected in screen outside.

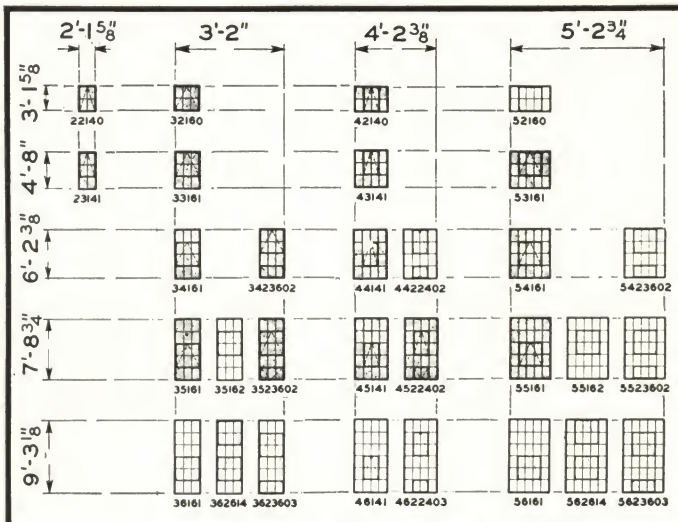


Mullion M22—M Mullion and cover.

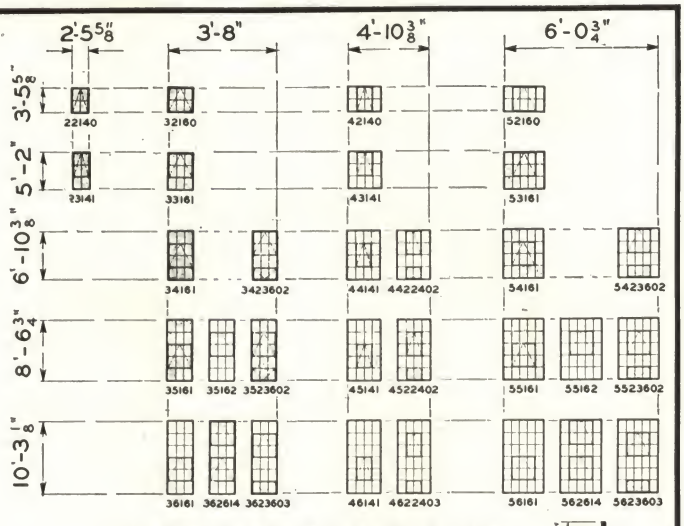
Mullion T22—T Mullion and cover.



Hardware for Commercial and Architectural Projected Windows, shown on this and opposite page is of the same design.



12 x 18 LAYOUTS AND SIZES



14 X 20 LAYOUTS AND SIZES

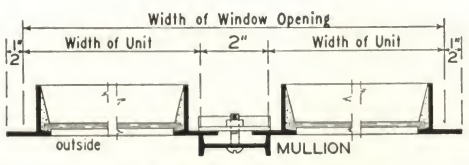
SPECIFICATIONS

All units viewed from outside.
Rolled Sections 1½″ deep.
Ventilator heads & sills 1⅝″ deep.
Double contact weathering.
Ventilators, balanced on heavy steel arms, have bronze sliding pivots.
Putty glazing inside.
Glazing springs: 4 per light.
Mullions, 2″ wide, extend 2″ into sill.
Window anchorage clips furnished when specified.

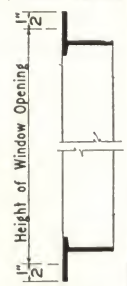
Indicates vent opening out.
Indicates vent opening in.

SHADED UNITS ARE DEALERS STOCK.

12″x18″ GLASS SIZE IN FIXED PORTION. GLASS IN VENTS AT EDGES (TOP, BOTTOM & BOTH SIDES) MUST BE TRIMMED ONE INCH.



HORIZONTAL SECTION



VERTICAL SECTION

COMMERCIAL PROJECTED WINDOWS 224

THIS PRODUCT CLASSIFIES WITH PIVOTED WINDOWS IN LAYOUT AND QUALITY

BAYLEY PROJECTED WINDOWS
ARCHITECTURAL — *Screened*

for schools, clubs, offices, public and monumental buildings. Used in single units or in bays. Procurable in steel, or steel hot dip galvanized.

Sections 1½" and 1⅝" deep enclosed within an outside frame of extra heavy deep flanged channel welded at corners. This increased width stiffens the product and improves appearance.

Ventilator sections, welding, weathering, and working parts are similar to those used in commercial projected (page 14) but workmanship is stepped up for this more finished window.

Glazing is inside with bed putty and steel beads, or with putty, and outside with putty when requested.

Hardware is of heavy pressed steel, cast malleable and bronze. The cam so often found on Bayley windows is the most effective draw-up-tight attachment. As in all Bayley windows the depth of sections and their shape provides for secure fastening, another outstanding Bayley feature.

Screens manufactured by Bayley fit flat against the weathering and cover cam hardware.

Furnished with underwriter's labels. See page 11.

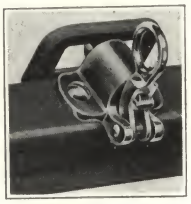
Recognizing value, careful designers rate this Bayley window as today's best buy, for they know the sections, workmanship, and trim place its usefulness equal to that of more expensive products.

Projected out ventilator above permits use of screens and shades without interference.

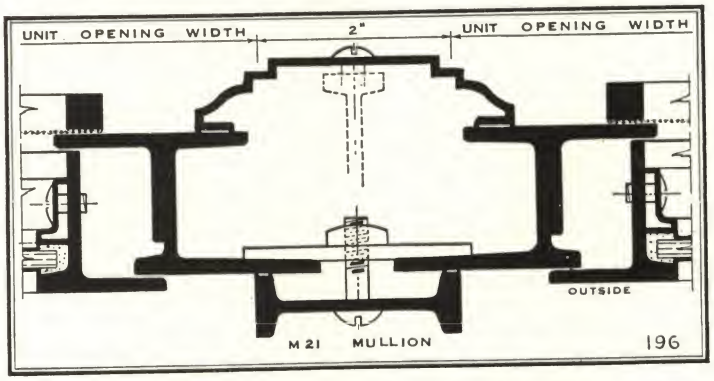
Projected in ventilator below controls ventilation.

H113 for Projected In Vents Within Reach

H 20 Cam for projected out located within ventilator operates through sill



H112 Pole Catch for Projected In Vents Out of Reach



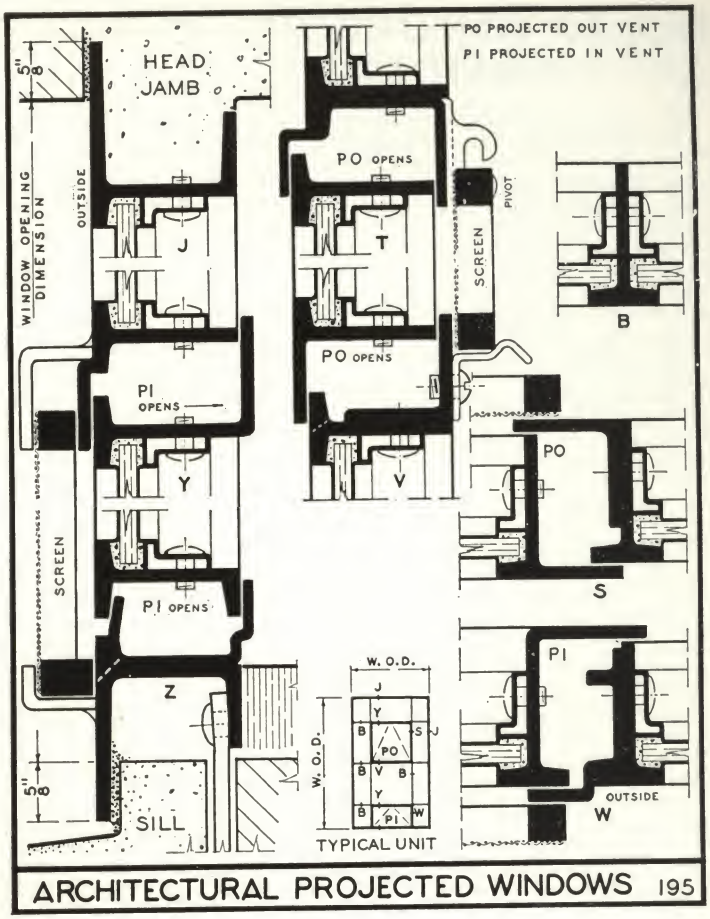
Mullion M 21—M Mullion and cover. T 21—T Mullion and cover.

REFERENCE TO PHOTOGRAPH SHOWN ON COVER

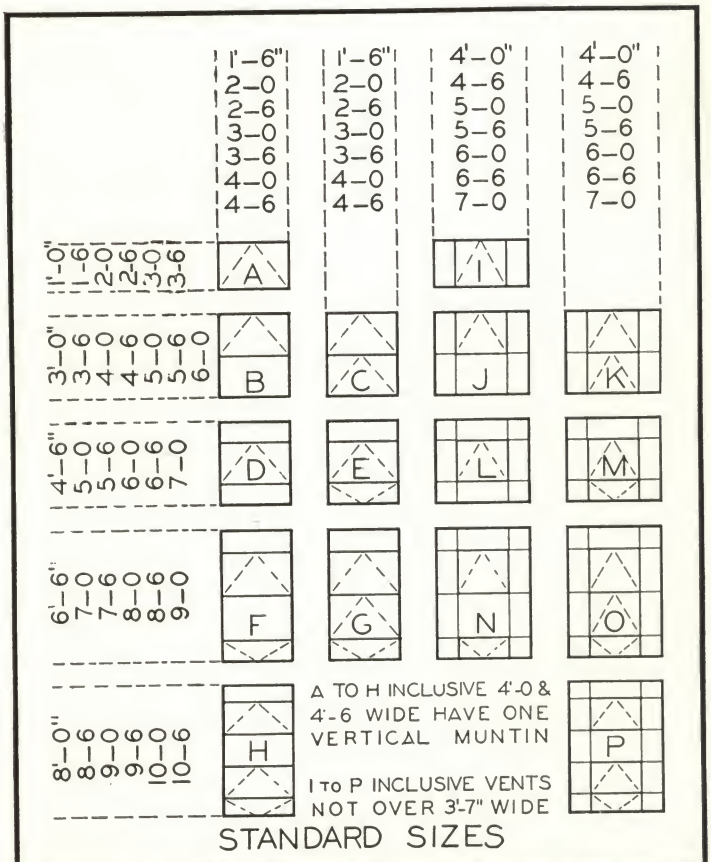
The John Woodman Higgins Armory and Administrative Offices
Worcester Pressed Steel Company, Worcester, Mass.
J. D. Leland & Company, Boston, Architects and Engineers

Steel windows, glass and structural steel are the essential materials used for the walls of this building. It is entirely fitting that the exterior of this building should be made to express its purpose through the use of materials similar to those manufactured by the Owner.

This building also houses a museum in which the progress of steel from its early craftsmanship as shown by specimens of arms and armor representing most of the periods of history from the early Greek Wars down to the recent World War and also examples of modern machine production as exemplified in an automobile chassis. The building is an outstanding achievement of the effective use of modern materials and will have its influence on the future design and efficiency of buildings.



ARCHITECTURAL PROJECTED WINDOWS 195



ARCHITECTURAL PROJECTED 283

THIS PRODUCT IS INTERMEDIATE BETWEEN COMMERCIAL AND CASEMENT PROJECTED

BAYLEY CONTINUOUS WINDOWS AND OPERATORS

For roofs and sidewalls are constructed of specially designed solid rolled steel sections welded together for strength and permanency. The sill member is of a new design having no pockets for water or ice in either the open or closed position, at any useful angle. It has an integral flange for operator attachment and a flat-surface contact with the structural steel and its shape is such that a condensation gutter of effective size and form may be used where advisable. Hinges, at four feet centers, placed inside of steel framing for protection, are of heavy steel with three-eighths inch brass pins and have slotted holes for adjustment to steel work. Vertical bars are spaced at two feet centers. Putty-bed on all members is in the same plane which facilitates glazing, requires less putty and reduces glass breakage. Where panels are joined the splice is placed at the center of glass space, and fully develops the strength of horizontal members. Vertical weathering, where hinged portions meet fixed panels, is of formed galvanized steel. Hinged windows have fixed panels one foot wide at extreme ends of lines and two feet wide at intermediate ends. All steel is given one dip coat of standard red oxide paint.

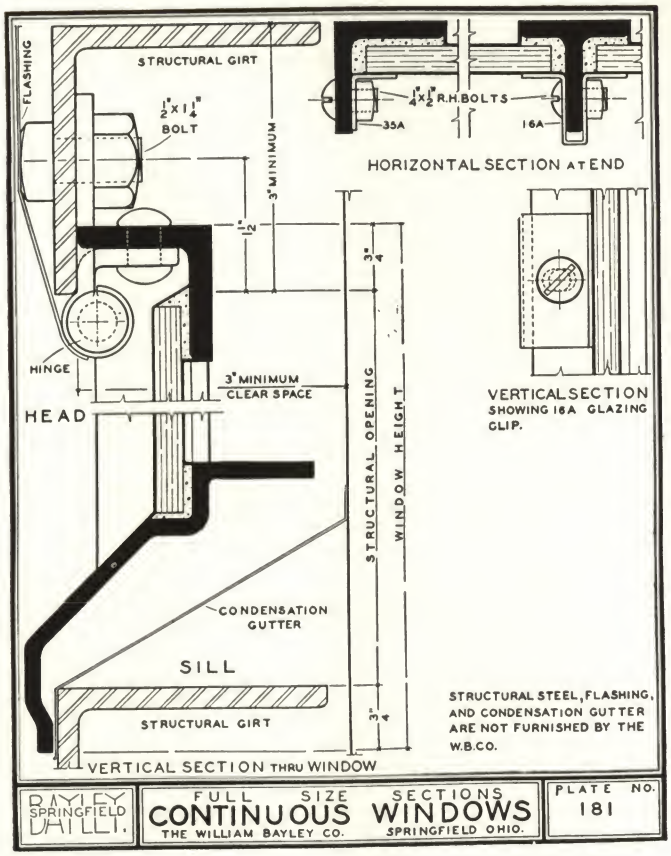
Overall length of windows should be held to full feet in order to use stock and insure quick shipment. Variations from full feet to be taken up with flashing by others.

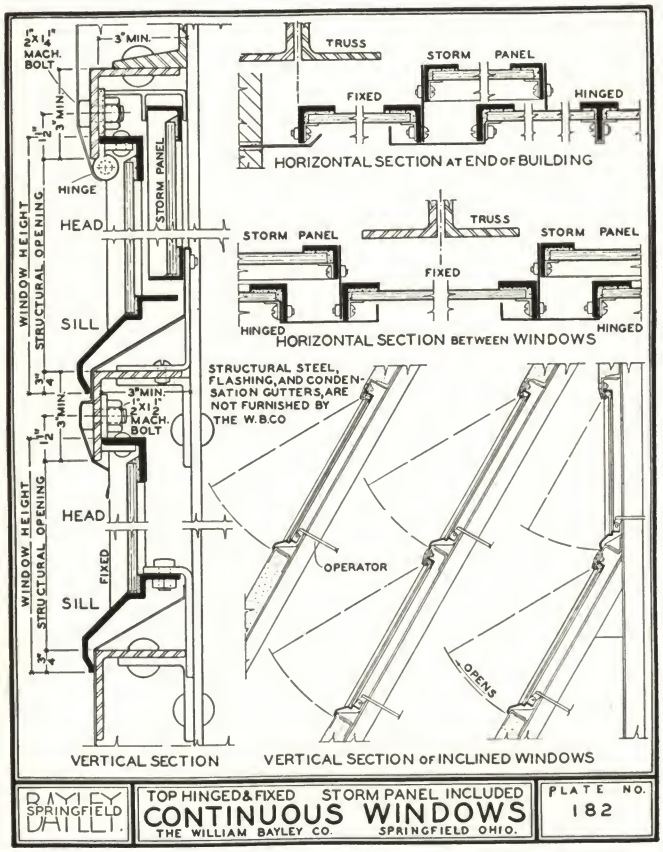
Storm Panels are not included but are furnished at extra cost when specially ordered and fit inside the three inch clearance space with provision to drain water outside. Glass in storm panels is of same size as glass in main part of line.

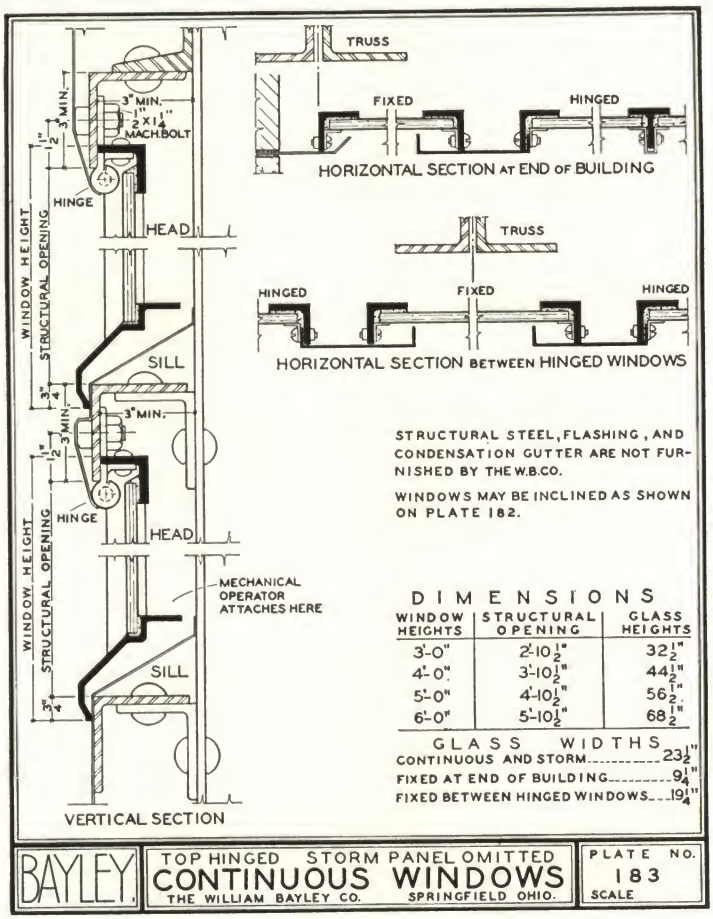
Wire glass one quarter inch thick is recommended and must be twenty-three and one-half inches wide, except in end panels, set in an even bed of putty struck flush with outside surface of glass and held by galvanized metal clips and bolts. Face putty may be used at extra cost.

Continuous Window Operators are of the Tension type or Rack and Pinion type. They may be either manually or electrically controlled. Lengths of lines are determined by conditions of the installation. In general, Tension type is used for long lines and Rack and Pinion type used for short lines. This product is of sturdy construction and good quality. Parts are designed to eliminate friction and include such features as machine-cut racks, pinions, worms and gears; bronze or ball bearings, where necessary; and provision for working parts to run in oil.

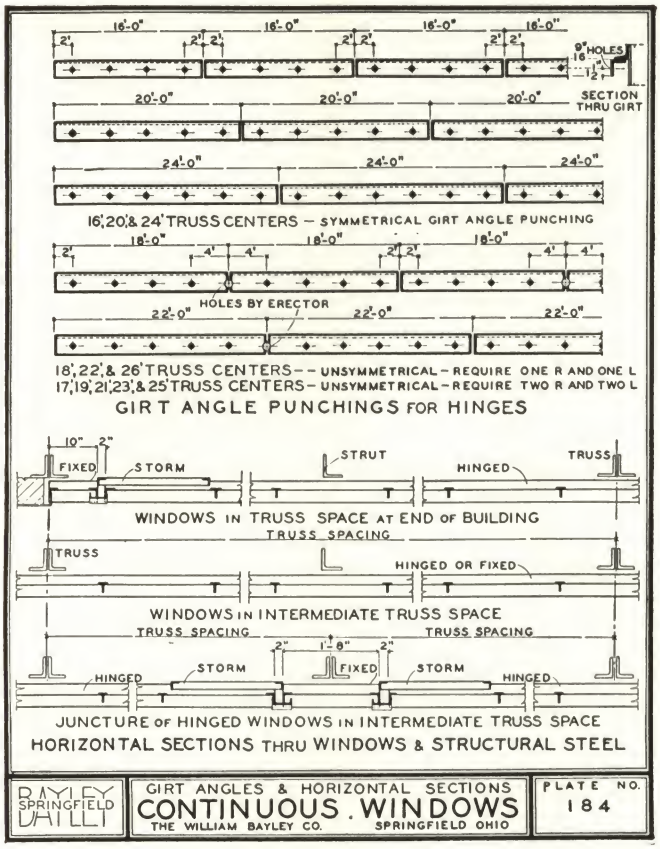
Items not furnished by The William Bayley Co. are structural steel, all flashing and condensation gutters, glass, putty, erection, pointing, field painting and glazing, unless specifically mentioned in the contract.







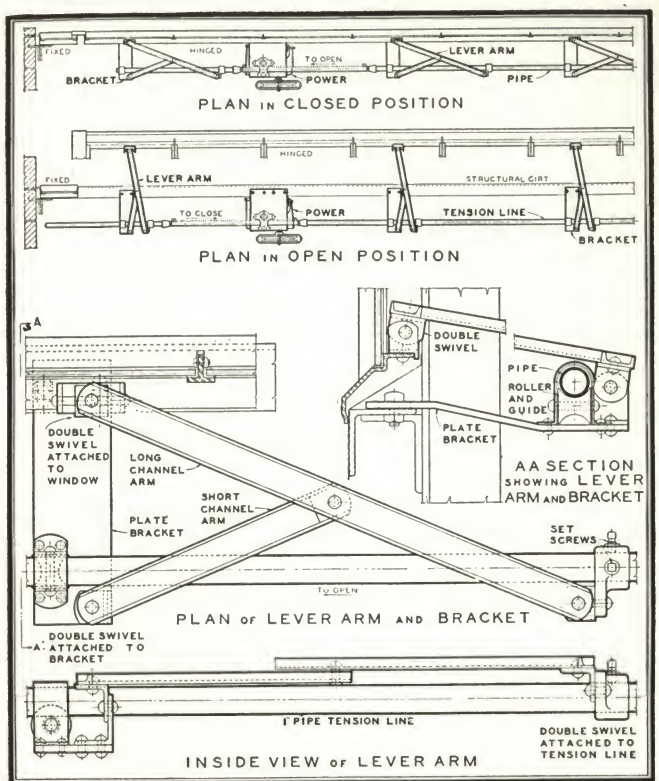
MECHANICAL OPERATORS BY THE METALLIC SASH OPERATOR



BAYLEY SPRINGFIELD DAILEY

GIRT ANGLES & HORIZONTAL SECTIONS
CONTINUOUS WINDOWS
THE WILLIAM BAYLEY CO. SPRINGFIELD OHIO

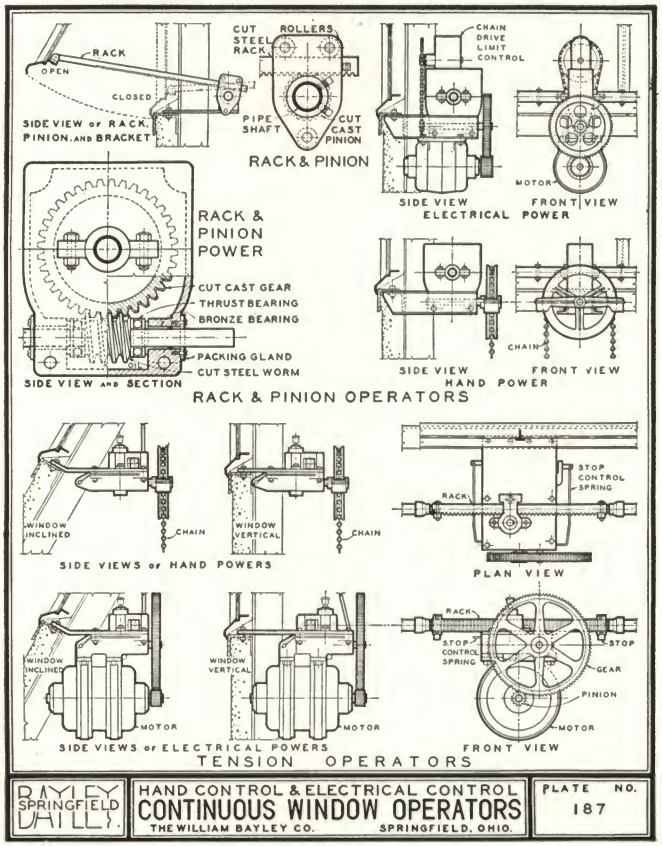
PLATE NO. 184



BAYLEY SPRINGFIELD DAILEY

TENSION LINE & LEVER ARM
CONTINUOUS WINDOW OPERATOR
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

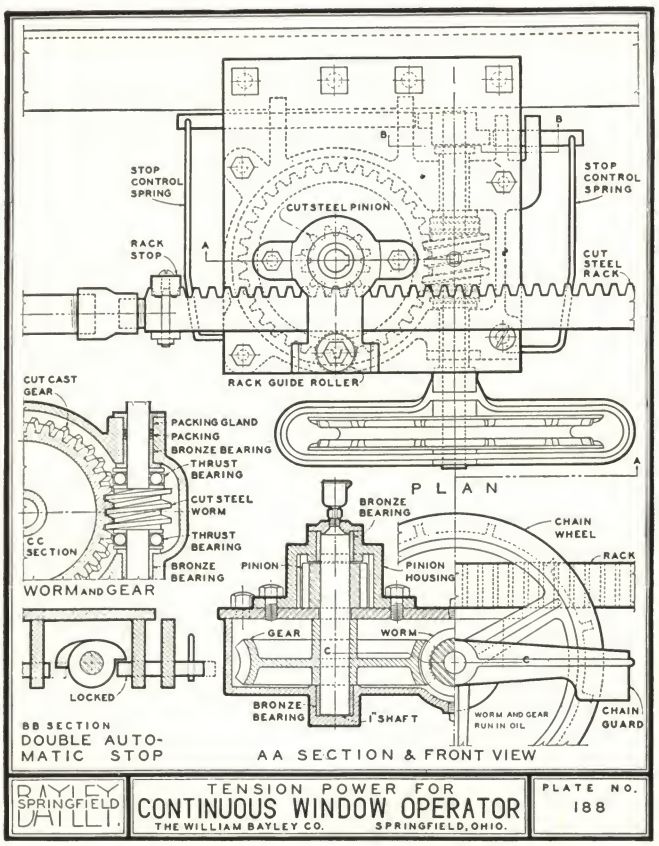
PLATE NO 186



BAYLEY SPRINGFIELD DAILEY

HAND CONTROL & ELECTRICAL CONTROL
CONTINUOUS WINDOW OPERATORS
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

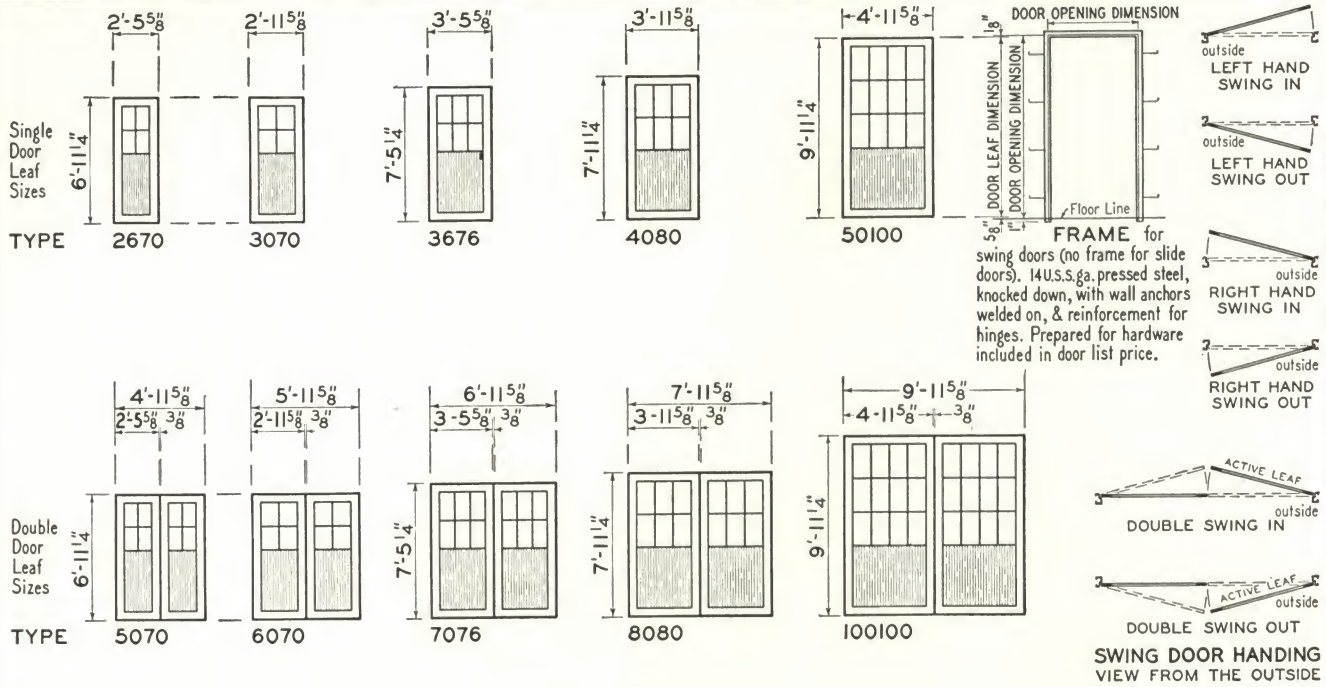
PLATE NO. 187

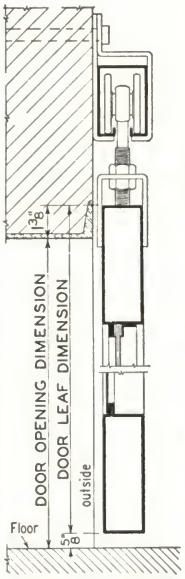


BAYLEY SPRINGFIELD DAILEY

TENSION POWER FOR
CONTINUOUS WINDOW OPERATOR
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

PLATE NO. 188





VERTICAL SECTION SLIDE DOORS

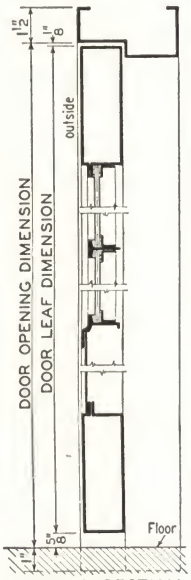
SIZES – SWING & SLIDE DOORS

DOOR TYPE		SWING & SLIDE LEAF SIZES		SWING DOOR DOOR OPENING SIZES		SWING DOOR ®MASONRY OPENINGS		SLIDE DOOR OPENING SIZES		GLASS SIZES
		Width	Height	Width	Height	Width	Height	Width	Height	
Single Doors	2670	2'-5⅝"	6'-11¼"	2'-6"	7'-0"	2'-9"	7'-1½"	2'-3"	6'-10½"	9½" x 16"
	3070	2-11⅝	6-11¼	3-0	7-0	3-3	7-1½	2-9	6-10½	12½ x 16
	3676	3-5⅝	7-5¼	3-6	7-6	3-9	7-7½	3-3	7-4½	10¼ x 19
	4080	3-11⅝	7-11¼	4-0	8-0	4-3	8-1½	3-9	7-10½	12¼ x 22
	50100	4-11⅝	9-11¼	5-0	10-0	5-3	10-1½	4-9	9-10½	12⅛ x 22½
Double Doors	5070	2-5⅝	6-11¼	5-0	7-0	5-3	7-1½	4-9	6-10½	9½ x 16
	6070	2-11⅝	6-11¼	6-0	7-0	6-3	7-1½	5-9	6-10½	12½ x 16
	7076	3-5⅝	7-5¼	7-0	7-6	7-3	7-7½	6-9	7-4½	10¼ x 19
	8080	3-11⅝	7-11¼	8-0	8-0	8-3	8-1½	7-9	7-10½	12¼ x 22
	100100	4-11⅝	9-11¼	10-0	10-0	10-3	10-1½	9-9	9-10½	12⅛ x 22½

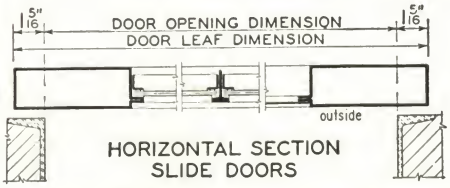
®MASONRY OPENING SIZES BASED ON USE OF BAYLEY STANDARD PRESSED STEEL DOOR FRAMES.

SPECIFICATIONS: Elevations are viewed from outside.
Swing doors: specify hand and swing (see diagrams above).
Slide doors: singles – specify "slide right" or "slide left"; all double slide doors slide apart.
Tube: 1¾"x5"x14 U.S.S. pressed steel. Corners mitered, internally reinforced, welded and ground. Prepared for hardware included in door list price.
Upper panel: inside, angle glazed. Glass and putty not included.
Lower panel: 18 U.S.S. gauge steel, welded in.
Upper and lower panels: steel (no glass) – same price, factory shipment.
Paint: one standard protective coat.
Hardware included in door list price:
Swing doors: three hinges per leaf; and top and bottom bolts for inactive leaf of double doors.
Slide doors: complete track equipment, hasp and staple (without padlock), handles, guides, and stops.

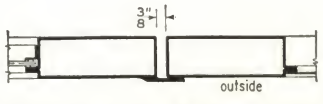
LIST EXTRAS for SWING DOORS
CYLINDER LOCK – Iron Handles.....
– Bronze Handles..
LEVER LATCH (without padlock)....
BIT KEY LOCK (leaf limit 32 sq.ft.) –
– Steel Plated Trim..
– Bronze Trim.....
HOOK BACK & RING.....
*ONE REQUIRED PER DOOR OPENING



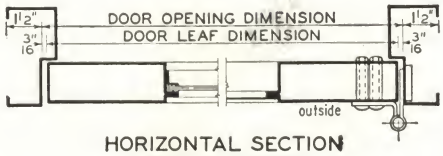
VERTICAL SECTION SWING DOORS



HORIZONTAL SECTION SLIDE DOORS



ASTRAGAL FOR DOUBLE DOORS TYPICAL FOR SWING OR SLIDE



HORIZONTAL SECTION SWING DOORS

BAYLEY

INDUSTRIAL DOORS

THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

PLATE NO. 220

SCALE 1½"=1'-0"

BAYLEY TUBULAR STEEL DOORS

BAYLEY STEEL DOORS with or without frames are made to lift, hinge, slide overhead or on floor tracks, and to fold vertically and horizontally. Tubular doors shown on this page have rectangular welded tubes to withstand roughest treatment and are for round house, hangars, and other large openings.

Hinged Door and Frame

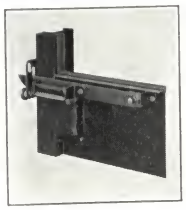
Tubular doors have mitered welded corners and corner re-enforcing welded inside the tubes which surround a filling panel to carry plate below and arranged for glazing above. These panels are 1½ in. deep with special channel frames welded to tubes. Hardware such as hinges and sliding or lifting equipment is of the most substantial kind designed for service without trouble and for permanency. Locks of non-corrosive metal by BAYLEY are reliable for heavy duty and have an exclusive design.

BAYLEY originated the tubular door idea as applied to a manufactured standardized product and continues to lead in design and workmanship. Airplane hangar doors are illustrated in a separate catalog.

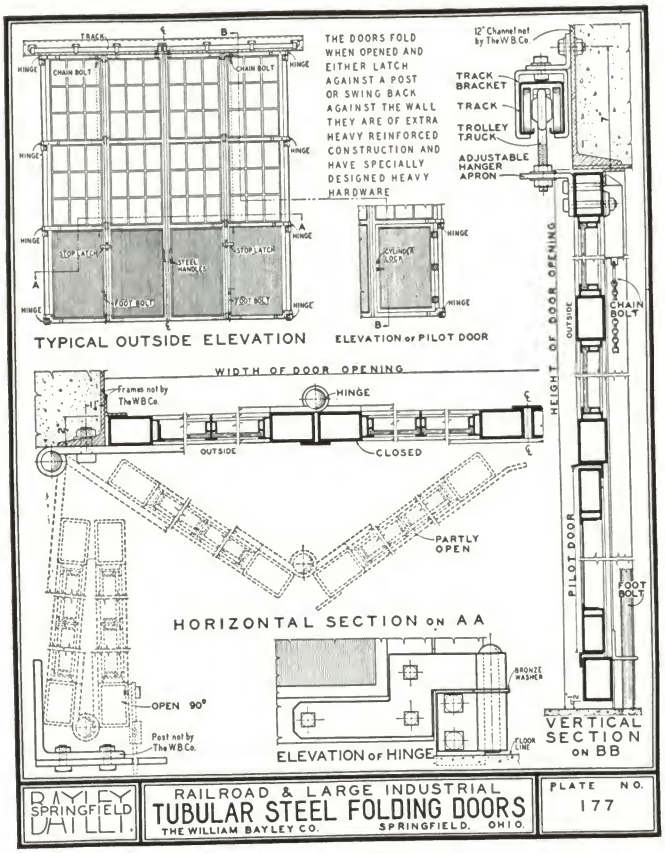
Hinged Door Brass Cylinder Lock Y 2

Hinged Door Steel Latch Y 14

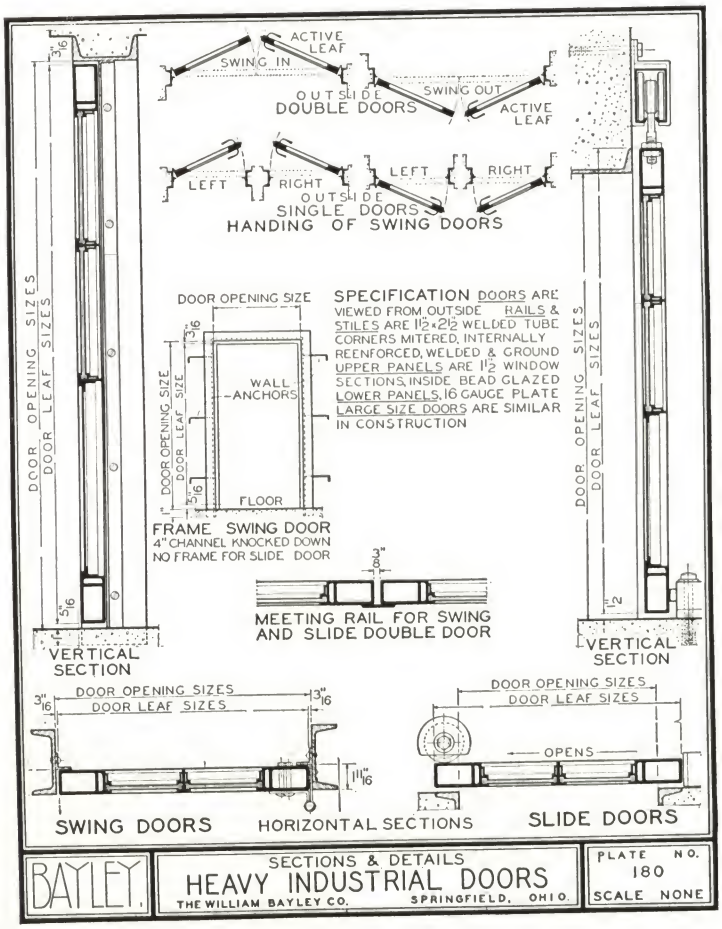
Sliding Door Brass Cylinder Lock Y 17



Sliding Door Steel Latch Y 13

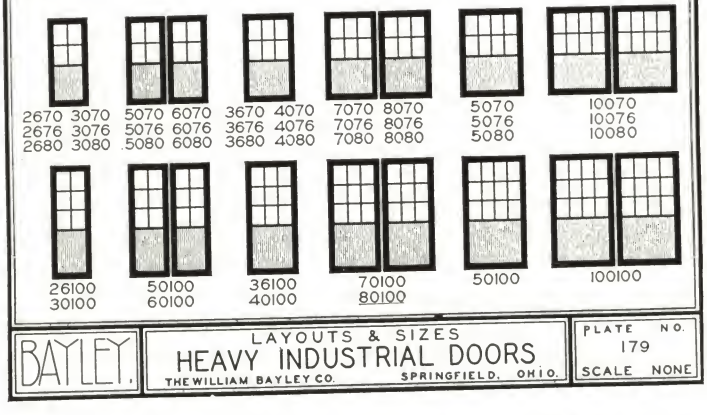


BAYLEY also manufactures Utility Doors for inside use Industrial Doors *(Page 18)*, and large doors of Structural Steel to special specifications.



SWING AND SLIDE DOORS SIZE SCHEDULE

SINGLE DOORS TYPE	OPENING SIZES SWING WI	SWING HI	SLIDE WI	SLIDE HI	DOUBLE DOORS TYPE	OPENING SIZES SWING WI	SWING HI	SLIDE WI	SLIDE HI	DOOR LEAF SIZES WI	DOOR LEAF SIZES HI	GLASS SIZES WI	GLASS SIZES HI
2670	2'-6"	7'-0"	2'-3"	6'-10½"	5070	5'-0"	7'-0"	4'-9"	6'-10½"	2'-5⅝"	6'-11½"	11⅝"	21⅛"
3070	3-0	"	2-9	"	6070	6-0	"	5-9	"	2-11⅝"	"	14⅝"	"
3670	3-6	"	3-3	"	7070	7-0	"	6-9	"	3-5⅝"	"	11⅝"	"
4070	4-0	"	3-9	"	8070	8-0	"	7-9	"	3-11⅝"	"	13⅝"	"
5070	5-0	"	4-9	"	10070	10-0	"	9-9	"	4-11⅝"	"	13⅛"	"
2676	2-6	7-6	2-3	7-4½"	5076	5-0	7-6	4-9	7-4½"	2-5⅝"	7-5½"	11⅝"	24⅛"
3076	3-0	"	2-9	"	6076	6-0	"	5-9	"	2-11⅝"	"	14⅝"	"
3676	3-6	"	3-3	"	7076	7-0	"	6-9	"	3-5⅝"	"	11⅝"	"
4076	4-0	"	3-9	"	8076	8-0	"	7-9	"	3-11⅝"	"	13⅝"	"
5076	5-0	"	4-9	"	10076	10-0	"	9-9	"	4-11⅝"	"	13⅛"	"
2680	2-6	8-0	2-3	7-10½"	5080	5-0	8-0	4-9	7-10½"	2-5⅝"	7-11½"	11⅝"	21⅛"
3080	3-0	"	2-9	"	6080	6-0	"	5-9	"	2-11⅝"	"	14⅝"	"
3680	3-6	"	3-3	"	7080	7-0	"	6-9	"	3-5⅝"	"	11⅝"	"
4080	4-0	"	3-9	"	8080	8-0	"	7-9	"	3-11⅝"	"	13⅝"	"
5080	5-0	"	4-9	"	10080	10-0	"	9-9	"	4-11⅝"	"	13⅛"	"
26100	2-6	10-0	2-3	9-10½"	50100	5-0	10-0	4-9	9-10½"	2-5⅝"	9-11½"	11⅝"	22
30100	3-0	"	2-9	"	60100	6-0	"	5-9	"	2-11⅝"	"	14⅝"	"
36100	3-6	"	3-3	"	70100	7-0	"	6-9	"	3-5⅝"	"	11⅝"	"
40100	4-0	"	3-9	"	80100	8-0	"	7-9	"	3-11⅝"	"	13⅝"	"
50100	5-0	"	4-9	"	100100	10-0	"	9-9	"	4-11⅝"	"	13⅛"	"



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Complete specifications and full size details of the products shown in this Catalog are available; also separate catalogs on mechanical operators for windows and airplane hangar doors.

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SPRINGFIELD · OHIO

G.C. 36

CAMPBELL METAL WINDOW CORPORATION

DIVISION OF AMERICAN RADIATOR AND STANDARD SANITARY CORPORATION

30 Rockefeller Plaza

NEW YORK, N. Y.

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ALL TYPES OF WINDOWS IN STEEL, BRONZE AND ALUMINUM

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15,000 Campbell Windows

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Projected Casements
Combination Casements
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Plate Type Double Hung Windows
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Industrial Projected Sash
Architectural Projected Sash
Tubular Industrial Doors
Screens for all Types of Windows
Mechanical Operators

MEMORANDA

CRITTALL MANUFACTURING CO., INC.

GENERAL OFFICES
WASHINGTON, D. C.

SALES CONNECTIONS CONVENIENTLY LOCATED THROUGHOUT THE UNITED STATES

CRITTALL CASEMENT WINDOWS AND DOORS—STEEL, ALUMINUM AND BRONZE

TYPICAL SPECIFICATIONS FOR CUSTOM-BUILT STEEL CASEMENTS

1. General

All windows shall be Crittall Universal Casements as manufactured by the CRITTALL MANUFACTURING CO., INC., Washington, D. C., or approved equal as per written approval by the architect. Windows shall be of sizes and designs shown on drawings and furnished complete with hardware and installation fittings.

2. Construction

All windows shall be fabricated from hot rolled sections of new billet steel weighing not less than 3.45 lbs. per lineal foot for medium sections and 4.6 lbs. for heavy sections per lineal foot of frame and ventilator members, exclusive of glazing beads, fins or sub-frames. Provide solid rolled steel mullions or transom bars between individual units. (The table of maximum sizes on page 4 shall govern the weight of section to be used.)

All corners shall be mitered, electrically welded and exposed surfaces ground smooth. All weathering contacts shall be continuous between parallel flat surfaces of not less than ¼-in. width at both inside and outside points of closure. Sections shall be so designed that in composite openings glass will be in the same plane in stationary and ventilating units and sight lines will be uniform throughout. Furnish moulded steel glazing beads carefully mitered and individually fitted to each pane, using countersunk brass screws.

(3) Fins (Optional)

Continuous angle fins shall be furnished at head and jambs of all openings, providing a continuous flat bearing at least 1 in. against the wall construction.

(4) Sub-Frames (Optional)

Furnish sub-frames of twelve gauge pressed metal with all corners and joints at mullion and transom bars coped or mitered and continuously welded along the entire line of intersection with welds dressed flush on all exposed contact surfaces.

(5) Paint

All steel sections shall be cleaned free from rust and scale and painted one coat of red rust-resisting primer and one coat of dark gray lead and oil.

(6) Glazing (Optional)

Furnish spring glazing clips for outside putty glazing.

(7) Hardware

(*a*) Side hinged casement ventilators shall have free swinging extension or close-in drop forged steel pivot hinges securely welded to frame and ventilator sections. Hinge pins shall be solid bronze. (*Optional*) Hinges shall be solid bronze butts with hardened steel pins 3 in. high for medium section and 4 in. high for heavy section. (*Optional*) Furnish extension or close-in pivot hinges with special zinc alloy friction washers to eliminate the use of sill adjusters. Furnish two hinges or butts for casements under 6-ft. height and three hinges for casements 6 ft. high and over.

Side hinged casements up to 5 ft. 6 in. to have solid bronze locking handle. Those 5 ft. 6 in. and over shall have two-throw latch. Casements with free swinging hinges to have solid bronze double bar sill adjusters. No sill adjuster required with friction hinges.

(*b*) Projected ventilators shall be balanced on two heavy supporting arms pivoted securely to the ventilator and to the frame. Friction shall be provided by two extruded bronze sliding shoes equipped with coil compression springs encased in a steel barrel housing securely welded to the ventilator section. Projected ventilators shall have cam handle or spring catch and be arranged for pole operation when out of easy reach from the floor.

(*c*) Top or bottom hinged ventilators to be equipped with steel pivots or solid bronze butts and shall have peg and stay for top hinged out or spring catch with concealed side arms for bottom hinged in ventilators.

(8) Screens

Provide metal screens for all openings. Frames to be of steel, bronze or aluminum special shaped one-piece continuous section .04 thick with ¼-in. diameter solid spline. Cloth to be 16-mesh bronze or aluminum wire with no cutout in either screen frame or cloth. Provide solid bronze screen type hardware consisting of geared operator and lever locking handle to allow all ventilators to be opened, closed and locked without removing screen.

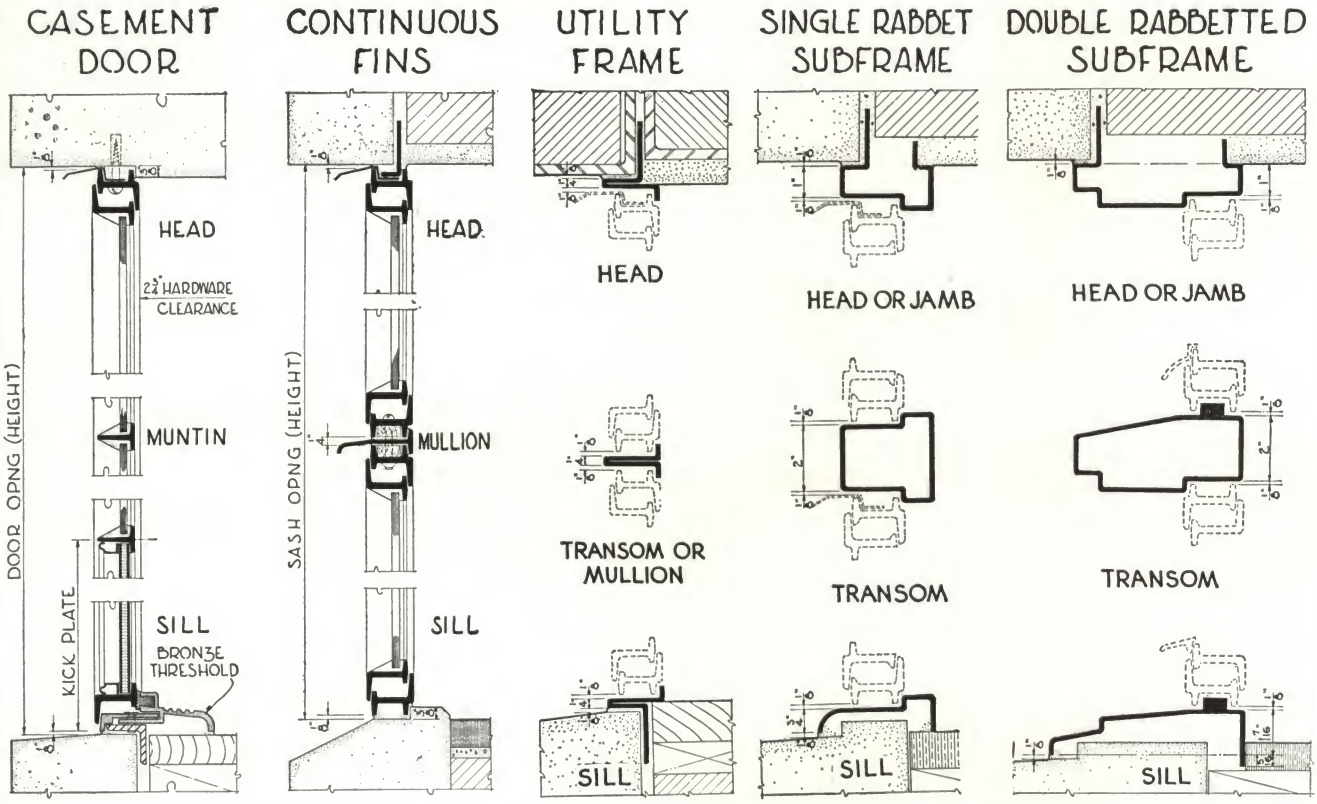
Field Work—(9) Setting

All windows to be erected by window manufacturer in prepared openings. Pressed metal sub-frames to be built in by masonry contractor. Glazing, grouting, caulking and field painting of windows shall be under other headings.

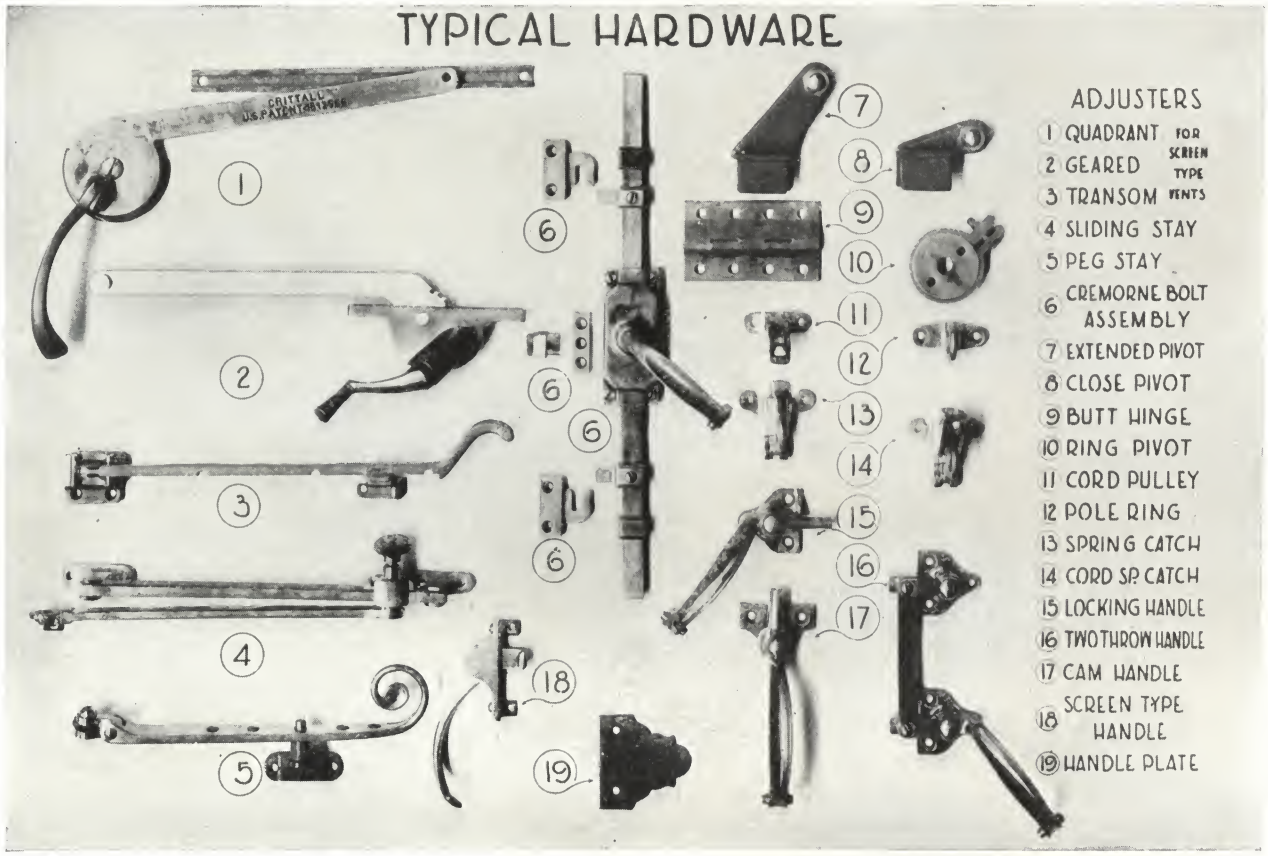
CRITTALL ALUMINUM AND BRONZE WINDOWS AND DOORS

Crittall non-ferrous windows and doors parallel the designs, sizes and types, and specifications of steel windows (except Stanwin type) and doors described previously. Sections are extruded, assembled by welding, carefully fitted and supplied with hardware suitable to non-ferrous construction. The section surfaces will be finished as requested but our experience and observations from many installations indicate that the smooth natural finish is the most practicable.

TYPICAL INSTALLATION DETAILS



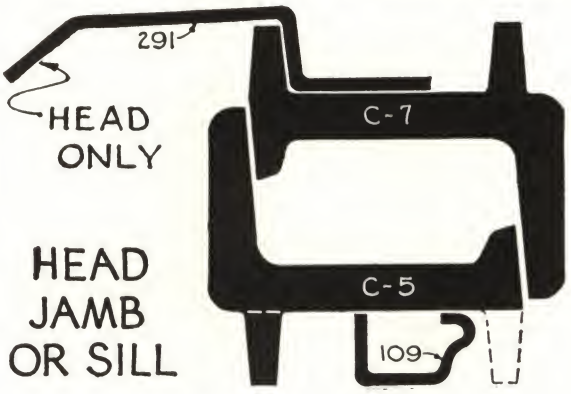
TYPICAL HARDWARE



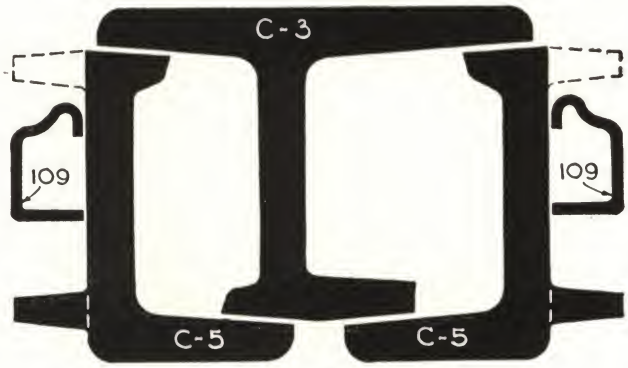
ADJUSTERS

1. QUADRANT FOR SCREEN TYPE VENTS
2. GEARED
3. TRANSOM
4. SLIDING STAY
5. PEG STAY
6. CREMORNE BOLT ASSEMBLY
7. EXTENDED PIVOT
8. CLOSE PIVOT
9. BUTT HINGE
10. RING PIVOT
11. CORD PULLEY
12. POLE RING
13. SPRING CATCH
14. CORD SP. CATCH
15. LOCKING HANDLE
16. TWO THROW HANDLE
17. CAM HANDLE
18. SCREEN TYPE HANDLE
19. HANDLE PLATE

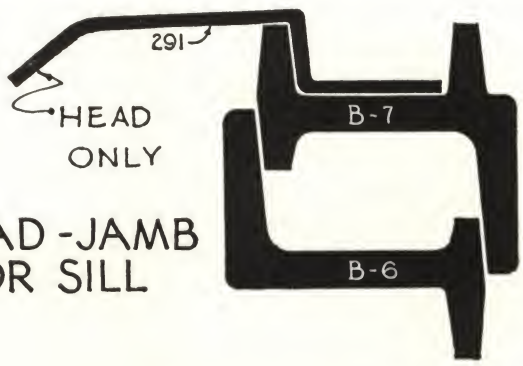
FULL SIZE HEAVY STEEL SECTIONS



TRANSOM BAR

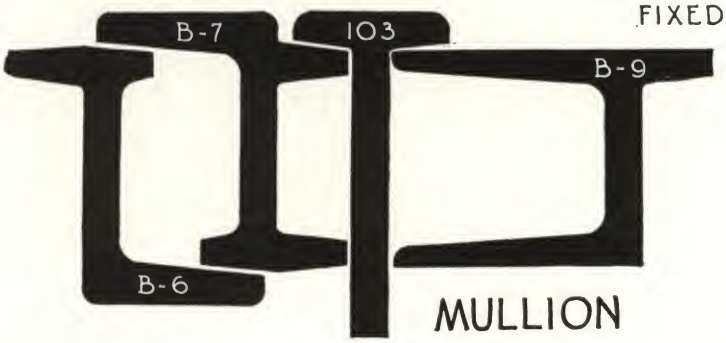


FIXED MEETING RAIL



HEAD-JAMB OR SILL FIXED

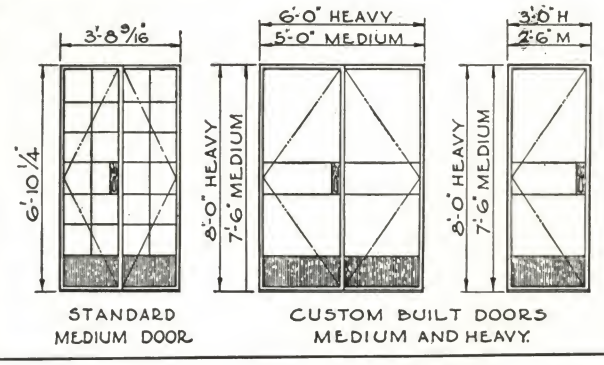
HORIZONTAL MEETING RAIL



MULLION

FULL SIZE MEDIUM STEEL SECTIONS

CRITTALL STEEL CASEMENT DOORS



Specifications for steel casement doors parallel those given for windows on page 1.

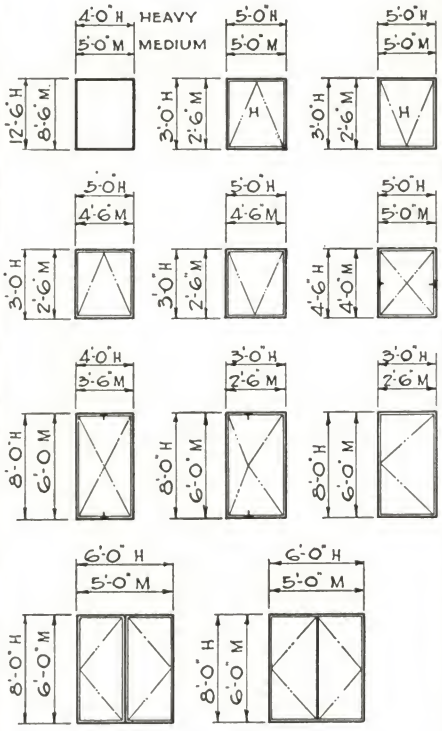
Door leaves are hung on three steel pivots per leaf (bronze butts furnished as an extra.) The active leaf is fitted with a double-acting cremone bolt with inside handle and thumb latch and outside handle (cylinders furnished as an extra). The inactive leaf of double doors is fitted with top and bottom bolts. Bronze thresholds are furnished as an extra. Doors may be prepared with or without muntins but two horizontal muntins are always furnished to properly hold the lock case.

NORMAN CASEMENTS—PROJECTED CASEMENTS—COMBINATION CASEMENTS

Certain combinations of fixed and ventilated medium section casements are used with such great frequency in the specific composite designs and sizes shown below and on page 5, that these particular combinations are conveniently identified by the following names: "Norman Casements," "Projected Casements," and "Combination Casements."

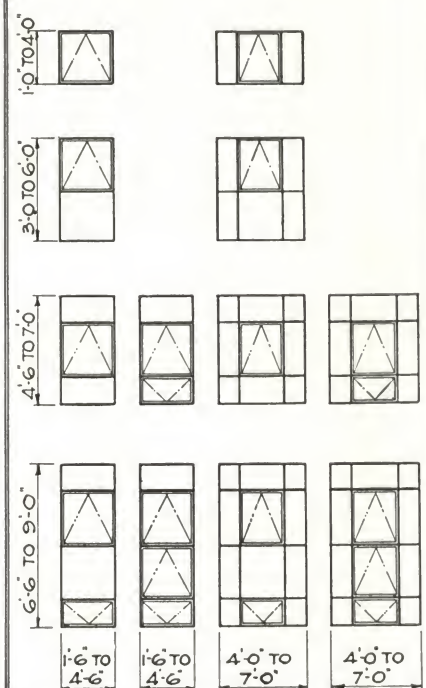
These casements are subject to the specifications on page 1 and to the hardware variations listed, except that all Norman Casement vents are hinged, all Projected Casement vents are equipped with projected movement, and all Combination Casement bucket and transom vents are equipped with projected movements.

BASIC CASEMENT DESIGNS LIMITING SIZES FOR MEDIUM AND HEAVY SECTIONS



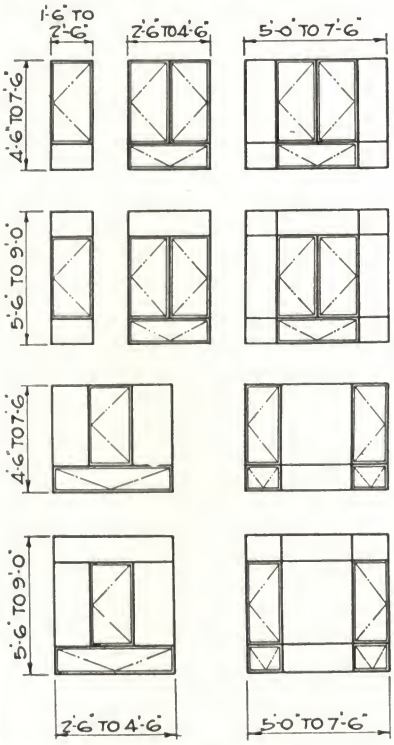
PROJECTED CASEMENTS DESIGNS AND SIZES

STANDARD IN MEDIUM SECTION. OUTSIDE PUTTY GLAZED. — STANDARD DIMENSIONS RUN IN 6" INCREMENTS BETWEEN THE MINIMUM AND MAXIMUM SIZES SHOWN.



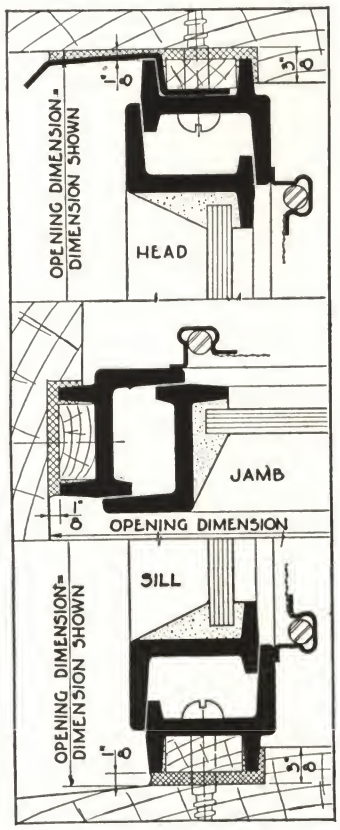
COMBINATION CASEMENTS DESIGNS AND SIZES

STANDARD IN MEDIUM SECTION OUTSIDE PUTTY GLAZED SEE NOTE AT LEFT FOR SIZE VARIATION.



NORMAN SCREEN TYPE CASEMENTS

½ SIZE SECTIONS



Specifications

All windows shall be Crittall Norman Casements in sizes and types shown on the drawings and as hereinafter specified.

Glass and glazing are specified under "Glazing." Grouting and calking are specified under "Masonry Work." Field painting is included under "Painting."

Casements are to be fabricated from hot rolled sections of new billet steel and the combined weight of outside frame and vent sections shall not be less than 3.45 lbs. per lineal foot.

Frame and vent frame corners shall be mitred, electrically welded and exposed surfaces ground smooth. Meeting rails and transom bars shall be riveted and welded. Muntins shall be riveted to frames and interlocked at their intersections.

All weathering contacts shall be continuous between parallel flat surfaces of not less than ¼-in. width at both inside and outside points of closure, without the use of applied or loose weathering linings.

Casement manufacturer to furnish spring glazing clips for outside putty glazing.

Side hinged vents shall be hung on extended drop forged steel pivots continuously welded to frame and vent frame. Top hinged vents are hung on close-up pivots.

Side hinged vents shall be fitted with underscreen locking handle (either No. 2001 or No. 2006) with concealed coil tension spring, and geared adjuster No. 2100 with ⅝-in. diameter case-hardened steel worm, and interior segment gear. This geared adjuster shall be so designed and carefully wrought that provisions (such as compensating set-screws) for field adjustments are unnecessary. Locking handles and adjuster case and handle shall be solid bronze with statuary finish. Top hinged vents shall be fitted with solid bronze underscreen push bar operator.

All steel sections shall be cleaned free from rust and scale and painted in the shop with one coat-resisting primer and one coat dark gray lead and oil paint.

Provide one metal screen for each vent with the screen frame made of one-piece steel section .04 in. thick and ¼ in. diameter solid steel spline, enameled dark gray. Cloth shall be 16-mesh bronze wire. Grommets in cloth will not be permitted.

All casements shall be erected complete into prepared openings by the manufacturer and bedded in non-staining mastic cement with excess mastic neatly trimmed off.

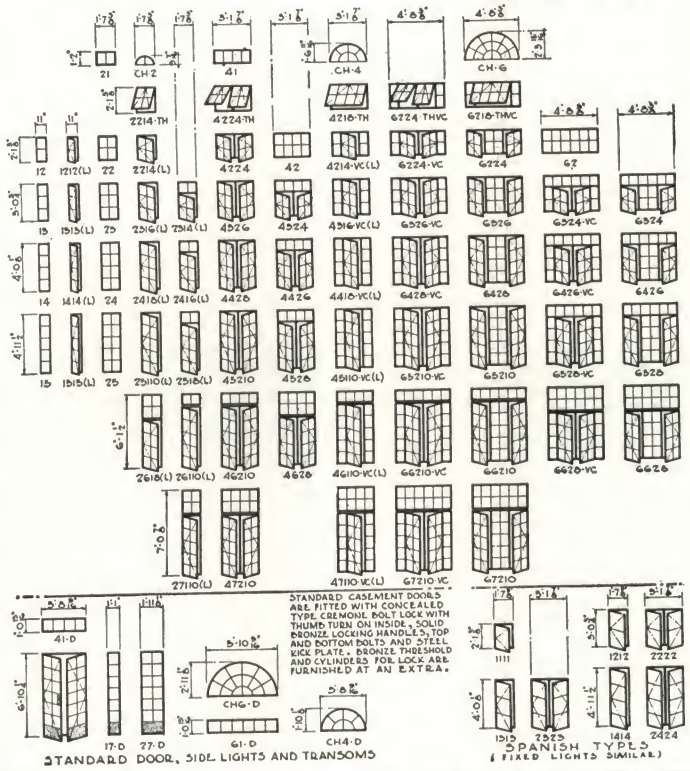
Where insect screening is not essential, specify friction pivots and solid bronze locking handle (pivoted type, with concealed coil tension spring) on side-hung vents and bronze peg and stay adjuster on top-hinged vents.

Construction "without sight lines" is furnished when specified.

STANDARD TYPES AND SIZES

ALL SINGLE SIDE HINGED VENTILATORS SHOWN ON THIS SHEET ARE LEFT HAND (L). EITHER LEFT HAND (L) OR RIGHT HAND (R) CAN BE FURNISHED WHEN SPECIFIED.

DIMENSIONS SHOWN ARE OPENING DIMENSIONS; EXCEPT HEIGHTS OF CH·2, CH·4 & CH·6 WHICH ARE NET.



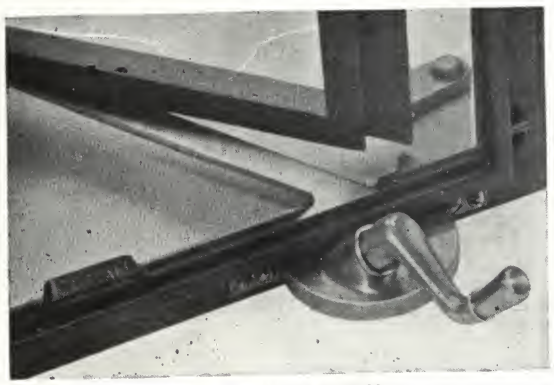
STANDARD DOOR, SIDE LIGHTS AND TRANSOMS

STANDARD HARDWARE

Handle No. 2006

LEFT HAND ← RIGHT HAND →

Handle No. 2001



Gear Operator No. 2100
(Left Hand)

STANWIN CASEMENTS

Specifications

Windows—All windows shall be Crittall Stanwin Casements as manufactured by the CRITTALL MANUFACTURING CO., INC., Washington, D. C., or approved equal as per written approval by architect, and shall be standard sizes and types, as shown on architect's drawings.

Sections—Both frame and ventilator section shall be Z-shaped hot-rolled low carbon new billet steel 1-in. depth front to back with combined weight not less than 2 lbs. per lineal foot, exclusive of fins or anchors. Ventilator section to be rolled with baffle providing a continuous two-surface flat weathering contact, with frame section. Corners of frame and ventilator sections mitered and electrically butt welded with exposed faces at welds ground to a smooth finish. Both vertical and horizontal muntins to be of same dimensions (¾x¾-in. T's), interlocked at intersections and securely air-hammer riveted to stiles and rails. A continuous drip shall be provided at transom bar and at head of all openings where the swing leaves extend the full height of casement. Horizontal and vertical mullions to be provided where necessary and to be special hot-rolled T-shaped sections.

Entrance Home Office

Hinges—Side-hinged ventilators to open out, are hung on extension cleaning hinges, of mill-rolled steel sections. One hinge leaf securely welded to frame, the other leaf riveted to ventilator to be ⅝ in. in depth to provide ample bearing for 1¼-in. bronze hinge pin. A $\frac{3}{16}$-in. special zinc alloy washer is inserted between the two hinge leaves to insure free movement. Top-hinged transoms to open out, bottom-hinged ventilators to open in, shall be hung on steel friction pivots.

Hardware—Provide attractively designed lever-locking handles in statuary bronze finish. The handle bracket to be attached to frame section, the lipped tongue portion of handle extending through the frame section to engage a bronze cam-shaped keeper securely attached to ventilator section. Separate locking handle to be provided for each hinged casement leaf. Provide circular steel plate bracket securely welded to under side of frame section. Bracket to be notched to receive heel of lever handle. Lever handle of attractive design to be attached to lever operating arm which extends through the frame section and engages a solid bronze channel-shaped guide attached to the under side of the ventilator. Operator to be automatic when released, with lever handle engaging the notched bracket plate, falling by gravity and locking the hinged casement leaf in a fixed position. The lever operating arm to be supported on and pivoted to the steel plate bracket. Both lever operating arm and lever handle to be statuary bronze finish. Geared operator optional.

Screens—Flat screens shall be provided for all casement openings. There shall be no cut-out in either screen frame or cloth. Screen frame to be special shaped drawn steel, one-piece continuous section .04 in. thick, $\frac{7}{16}$ in. deep, and ¾ in. on face, mitered and formed at three corners and welded and reinforced at fourth corner. The spline to be solid ¼-in. diameter steel rod continuous at all four corners. Frame painted one coat gray enamel baked on by manufacturer. Screen cloth shall be 16-mesh oxidized bronze wire.

Painting—All casements shall receive one coat of gray paint by the manufacturer before shipment.

Mastic—Provide 1 lb. mastic for each 10 ft. of casement perimeter.

Shading—All casements to be drilled at both jambs near head for standard shade and drapery bracket. Brackets to be furnished under another heading.

Anchors—Provide either clip anchors, wood screws, continuous fins or redwood surrounds for anchoring casement frame to building construction as shown by architect's drawings.

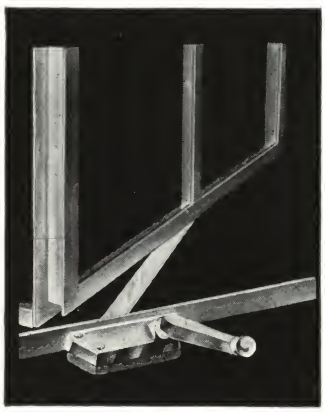
French Doors—Doors of medium weight section of standard size, design, and specification to be provided where shown.

Erection—Casements shall be set plumb and true and mastic applied to provide a weather-tight union between building construction, mullions and casement frames. Locking handle, and lever operator shall be shipped unattached, to be applied after erection in accordance with manufacturer's instruction. The locking handle-keeper and channel guide will be attached by the manufacturer before shipment.

Glass and Glazing—Casement manufacturer to provide copper plated spring glazing clips. Glass, putty and glazing to be provided under separate contract.

Options—Solid bronze hardware, and bronze or aluminum frame screens with bronze or aluminum screen cloth furnished at extra cost.

Specifications for non-screen type Stanwins are the same, except that friction hinges and locking handle are used instead of free hinges and under-screen hardware. Non-screen Stanwins may be readily equipped with side-hinged screens

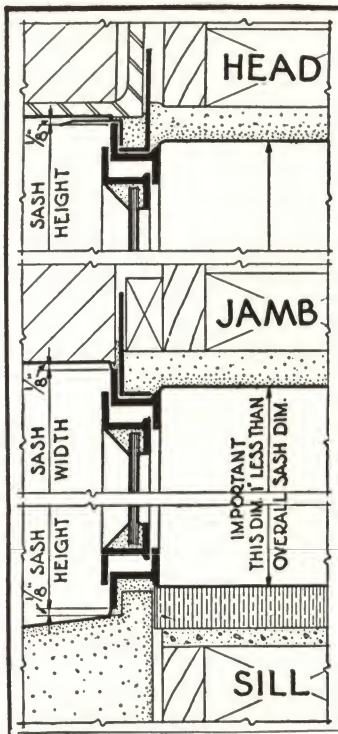


Gear Operator

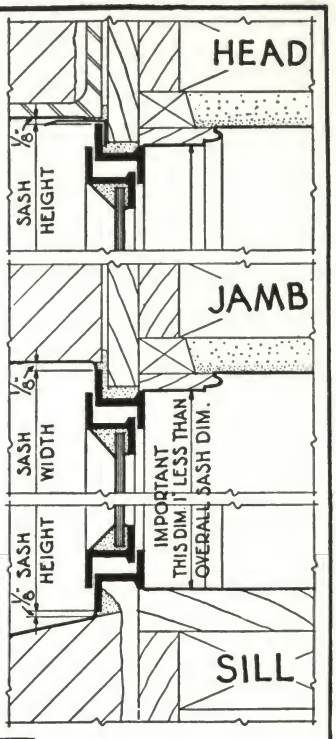
Locking Handle

Lever Operator

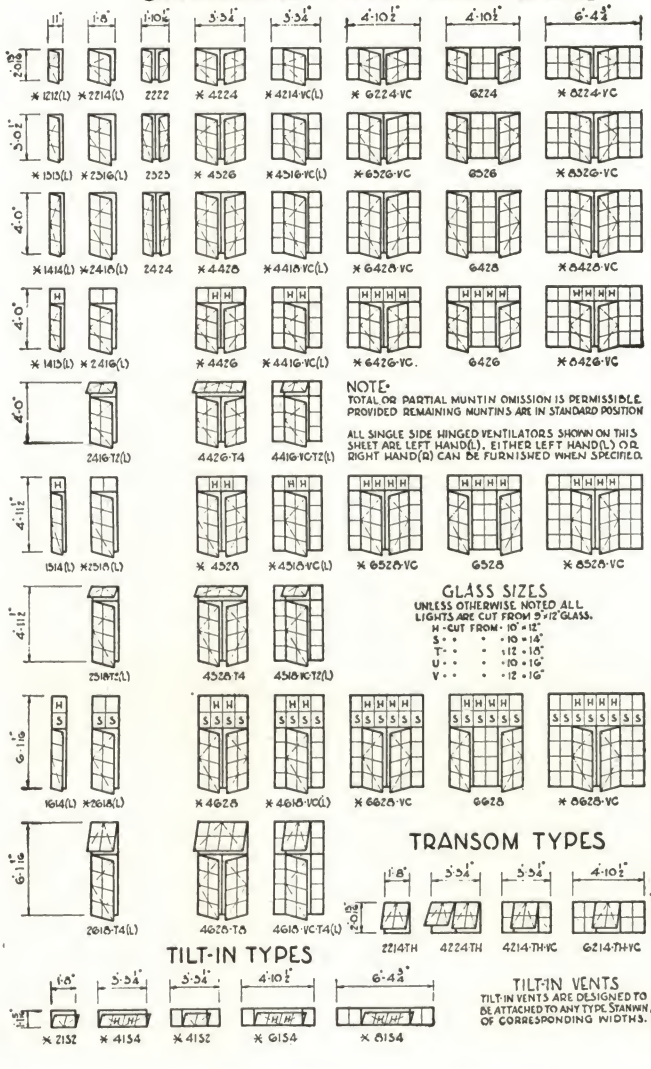
STANWIN CASEMENTS



(REDWOOD SURROUND)



STANDARD TYPES AND SIZES



NOTE:
TOTAL OR PARTIAL MUNTIN OMISSION IS PERMISSIBLE, PROVIDED REMAINING MUNTINS ARE IN STANDARD POSITION

ALL SINGLE SIDE HINGED VENTILATORS SHOWN ON THIS SHEET ARE LEFT HAND(L). EITHER LEFT HAND(L) OR RIGHT HAND(R) CAN BE FURNISHED WHEN SPECIFIED.

NOTE:
FIXED WINDOWS ALSO AVAILABLE WITH SIMILAR LIGHT ARRANGEMENT AND IDENTICAL DIMENSIONS

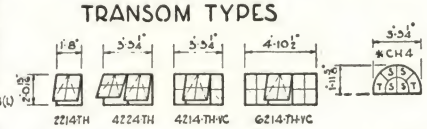
*Denotes Stock Types

GLASS SIZES

UNLESS OTHERWISE NOTED ALL LIGHTS ARE CUT FROM 9"×12" GLASS.

H - CUT FROM - 10" × 12"		
S - "	"	10 × 14"
T - "	"	12 × 15"
U - "	"	10 × 16"
V - "	"	12 × 16"

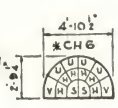
TRANSOM TYPES

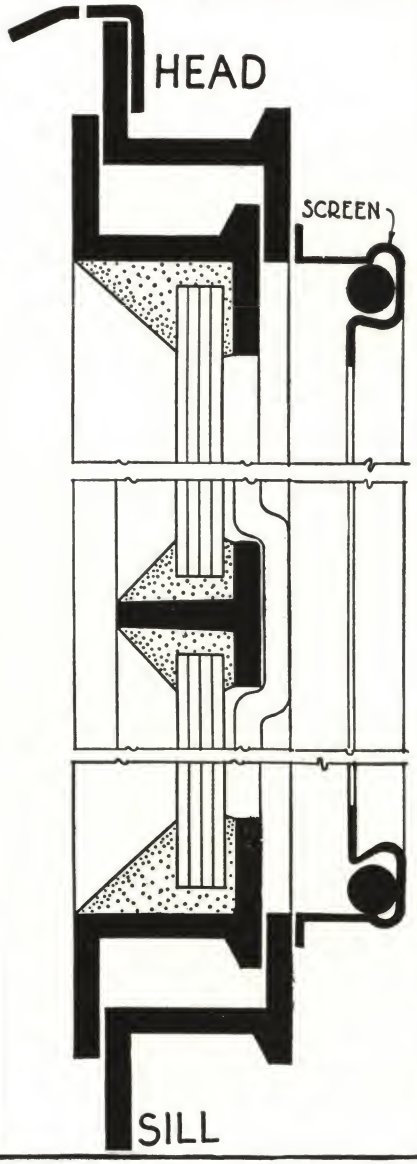


TILT-IN TYPES

TILT-IN VENTS

TILT-IN VENTS ARE DESIGNED TO BE ATTACHED TO ANY TYPE STANWIN OF CORRESPONDING WIDTHS.





CRITTALL DOUBLE HUNG WINDOWS

Weathertight and easy sliding sashes. Concealed balances that are mechanically correct in design and application insure constant, trouble free operation.

Non-ferrous sashes and muntins eliminate any need of painting them. Non-ferrous frames are also available and may be had when so indicated.

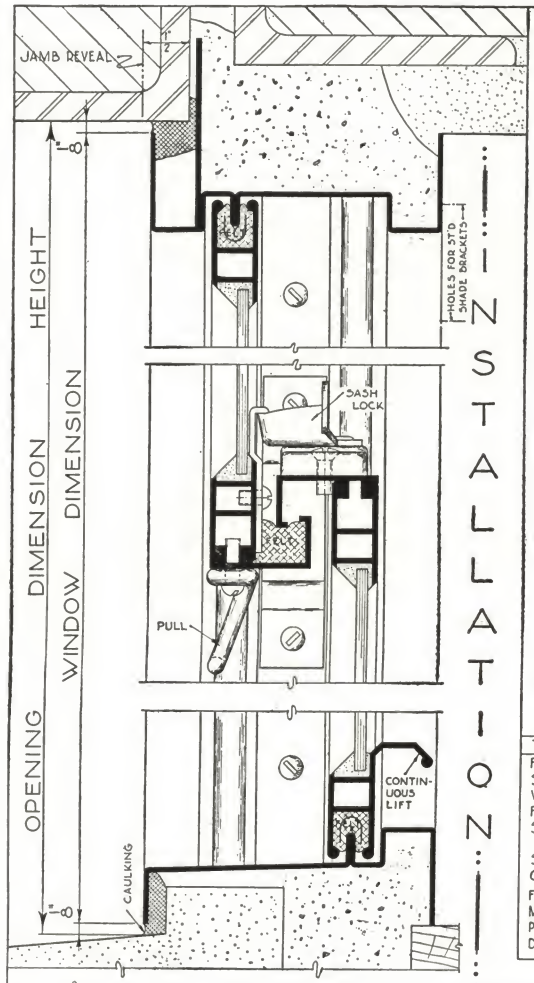
The trim lines and sturdy construction of these double hung windows blend into a handsome assembly.

Frames are built into the walls. The factory glazed sashes and fittings are installed and permanently set after the rough construction work in finished.

The wide range of standard types and sizes gives variety without penalty.

Designed, built, sold, serviced, and guaranteed by Crittall is a dependable assurance of satisfaction.

This double hung window costs no more than the ordinary window when all items of cost are considered and is typical of Crittall thoroughness.



TYPES & SIZES

♦STOCK IN STANDARD CONSTRUCTION

	2'-0"	2'-6"	3'-0"	3'-6"
3'-6"	2036	2636	3036	3636
4'-0"	2040	♦2640	♦3040	♦3640
4'-6"	2046	♦2646	♦3046	♦3646
5'-0"	2050	♦2650	♦3050	♦3650
5'-6"	2056	♦2656	♦3056	♦3656

DIMENSIONS SHOWN ARE OPENING DIMENSIONS.

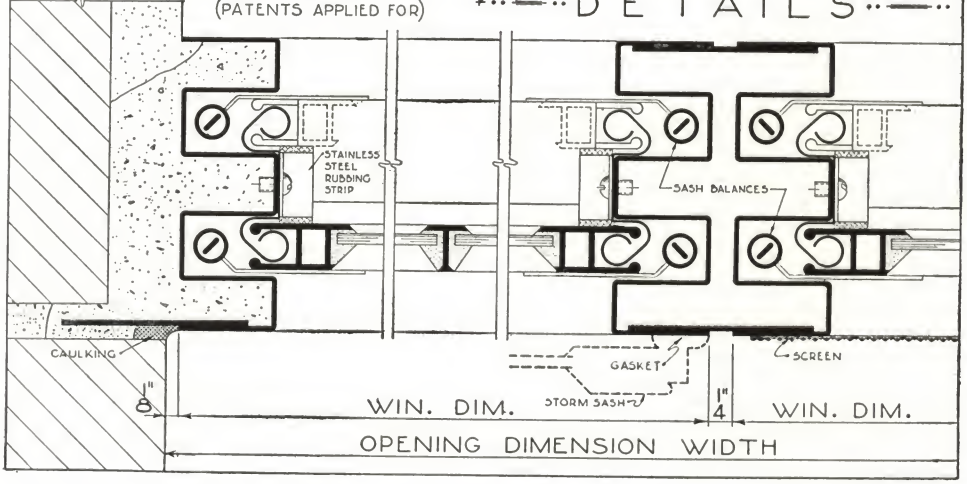
SUMMARY

TYPE OF CONSTRUCTION →	STANDARD	ALL ALUMINUM	ALL BRONZE
FRAME MATERIAL	STEEL	ALUMINUM	BRONZE
SASH	ALUMINUM	"	"
WEATHERING	ZINC	ZINC	"
FIN	STEEL	ALUMINUM	"
SCREEN, FULL HEIGHT	ALUMINUM	"	"
" CLOTH	"	"	"
STORM SASH FRAME	"	"	"
GLASS - SINGLE STRENGTH	LUSTRA OR EQUAL.		

FINS MAY BE OMITTED OR LOCATED TO SUIT WALL CONSTRUCTION.
MUNTINS MAY BE OMITTED OR LOCATED TO ARCHITECTS' DESIGN.
PUTTY GLAZING STANDARD. STRIP GLAZING FURNISHED AT AN EXTRA.
DOUBLE STRENGTH GLASS FURNISHED AT AN EXTRA.

(PATENTS APPLIED FOR)

DETAILS



Specifications

All windows shall be Standard construction double hung windows as manufactured by the CRITTALL MANUFACTURING CO., INC., Washington, D. C., and shall be furnished in types and sizes shown on the drawings.

Windows are to be furnished complete with steel frames with shop coat metallic primer and a coat of aluminum paint, aluminum sashes factory glazed with American "Lustra" glass set in aluminum putty, metal weatherstripping at jambs and non-metallic horizontal weatherstripping, stainless steel meeting rail rubbing strips, concealed balancing devices, pulls, and meeting rail locks.

After frames have been built into the wall and calked by the masons, the manufacturer shall install glazed sashes, weatherstripping, balances and hardware, and make any final adjustments necessary to insure easy sliding, weathertight windows.

Screens shall be full, tension type with aluminum cloth (or half-sliding steel frame screens with aluminum cloth).

Storm windows, with aluminum frames and non-metallic gasket, covering the entire outside face of the frame shall be furnished, factory glazed with American "Lustra" glass.

Note to specification writer: The foregoing specification covers Standard construction. All-Aluminum construction is the same as Standard, except aluminum frames instead of steel are furnished. All-Bronze construction is the same as Standard, except bronze frames and sashes are furnished instead of steel frames and aluminum sashes. Bronze frame screens and storm windows are also furnished when specified.

Windows with glazing strips, or to receive glass thicker than 1/8 in. can be made upon specific order.

Fenestra

BLUE BOOK OF STEEL WINDOWS

Top: International House, Chicago University.
Holabird & Root, Architects.

Left: 1616 Walnut Street Building, Philadelphia, Pa.
Tilden, Register & Pepper, Architects.

Bottom: U. S. Post Office, Cincinnati, Ohio.
Samuel Hannaford, Architect.

Steel Windows **Fenestra** Doors, Roof Deck

Manufactured by

DETROIT STEEL PRODUCTS COMPANY
2250 East Grand Boulevard, DETROIT, MICH.
FACTORIES: DETROIT, MICH., and OAKLAND, CALIF.

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***Stars indicate products referred to in this catalog. Additional information on any of the products listed will be sent on request.**

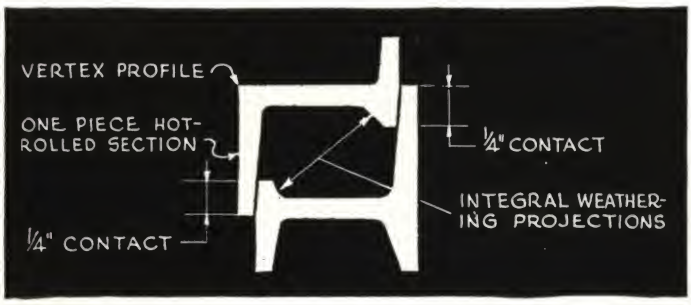
FENMARK—PROJECTED FENMARK—FENCRAFT—CUSTOM

GENERAL WINDOW SPECIFICATIONS

These specifications apply particularly to the windows named and are to be used in connection with the individual information regarding these windows given on succeeding pages.

1—SECTIONS

Sections shall be solid, hot rolled, vertex profile steel, especially designed for the manufacture of casement windows.



Weathering projections shall be rolled INTEGRAL with the sections to provide overlapping, parallel surface contacts of not less than ¼" at both outside and inside points of closure.

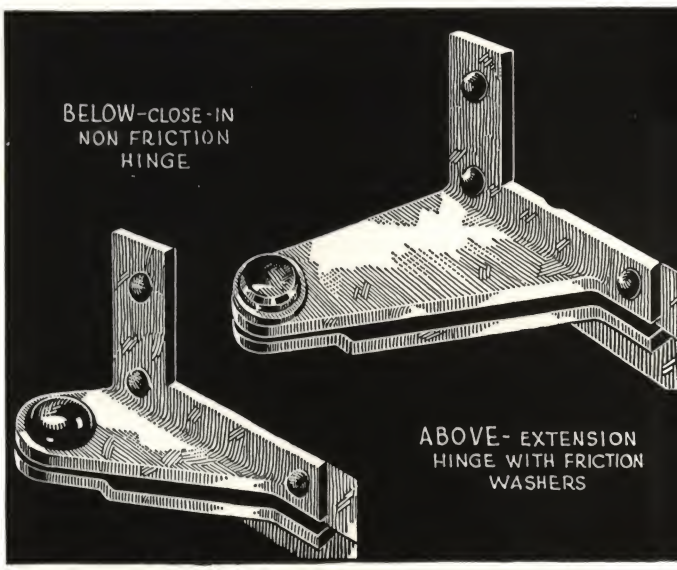
Movable sash shall make both outside and inside contacts against one-piece, hot rolled section at head, jambs and sill.

All sections shall be straightened by rerolling and shall be individually, electrically tested for straightness. Corners of all ventilators shall be electrically welded and ground smooth.

2—HINGES

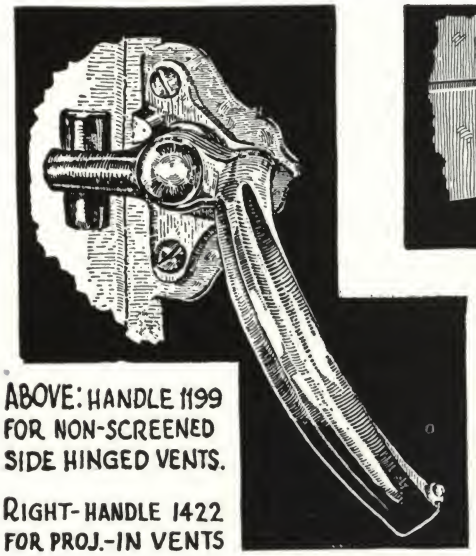
Side Hung Ventilators shall be hung either on "Extension Hinges" or on "Close In" Hinges of especially designed, vertex profile, solid, hot rolled steel. Hing pins shall be solid bronze, accurately fitted into bronz bushings. Top or Bottom Hung Ventilators shall b hung on flat, 5-knuckle hinges.

(Both "Extension" and "Close In" Hinges may be equipped with friction washers, eliminating the need of sill adjusters, but these Friction Hinges are not recommended where the windows are to be screened, as they cannot be used with Fenestra Flat Screens. See Paragraphs 6 and 9. If screens are necessary with Friction Hinges, specify Swing, Rolling or Sliding Screens.)



ABOVE: HANDLE 699 FOR NON-SCREENED SIDE HINGED VENTS.

RIGHT: HANDLE 1222 FOR SCREENED TYPE SIDE HINGED VENTS.



ABOVE: HANDLE 1199 FOR NON-SCREENED SIDE HINGED VENTS.

RIGHT- HANDLE 1422 FOR PROJ.-IN VENTS

3—LOCKING HANDLES

All locking handles shall be specification solid bronze unless otherwise specified, and shall be of ornamental design and attached to ornamental handle brackets, either by ornamental screws or by friction clevises.

Handles on side hung, screened type ventilators shall be of hinged design to permit their being slipped through the screen escutcheons.

When windows contain ventilators beyond reach from the floor, they shall be equipped with hardware suitable for pole operation.

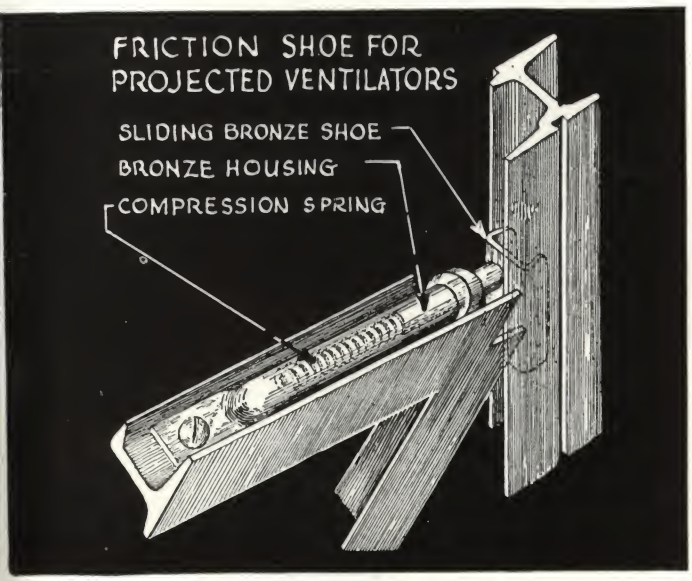
SPRING CATCH Nº 739 FOR BOTTOM HUNG OR PROJECTED OPEN IN VENTS

HANDLE NO. 914 FOR TOP HUNG OR PROJECTED OPEN OUT VENTS

4—SLIDING SHOES

Projected Ventilators shall be supported on heavy spring steel side arms and shall be equipped with two bronze, sliding, friction shoes, the friction being maintained by compression springs of heavy, rust-proofed music wire, completely enclosed in bronze housings.

(Projected Ventilators used at the sills of windows, tilt in at the top while sliding up from the bottom. Projected Ventilators used above the sill, usually swing out at the bottom while sliding down from the top, but may tilt in from the top if so specified.)

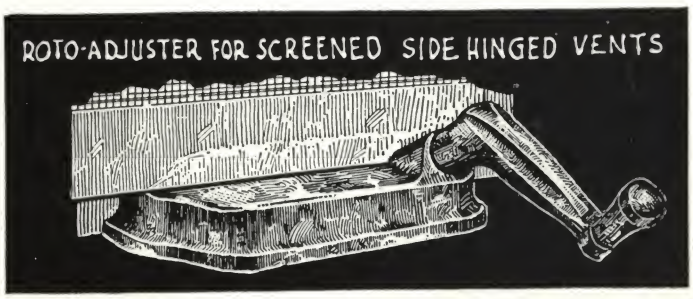


5—WINDOW CLEANING

(Windows with projected ventilators or with single, side hung ventilators on "Extension Hinges" or with two adjacent side hung swing leaves on "Close-In" hinges may be cleaned on the outside from the inside. Windows with single side hung ventilators on "Close-In" hinges must be cleaned from the outside.)

6—ADJUSTERS

Side Hung Ventilators shall be: (a) Screened Type, equipped with non-friction hinges and Roto-Adjusters



or, (b) Non-Screened Type equipped (standard) with friction hinges and no adjuster or (special) with non-friction hinges and Sliding Friction Adjusters.

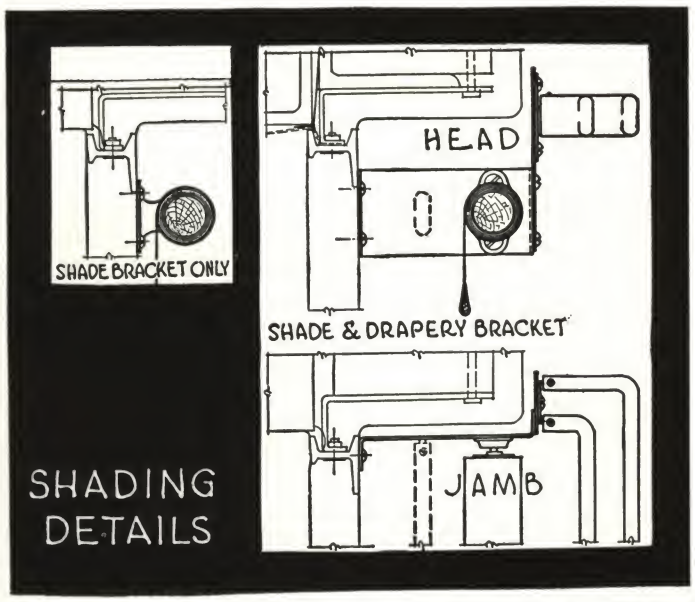
Top Hung Ventilators shall be: (a) Screened Type equipped with underscreen Notched Stay Adjusters or (b) Non-Screened Type equipped with Peg and Stay Adjusters.

(At extra cost Projected Out Ventilators may be equipped with special 15" underscreen, notched stay adjusters and Fenestra Flat Screens. See Section 9.)

7—SHADING

All windows shall be drilled at both jambs near the head, for the attachment of shade brackets. Brackets shall be supplied by the shading contractor.

(Shade bracket clips accommodating any standard bracket can be supplied at extra cost.)

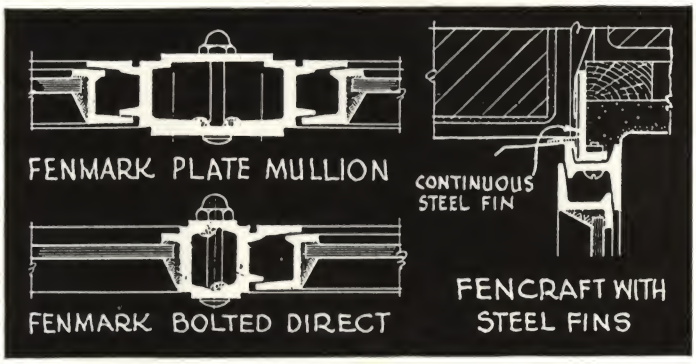


8—MULLIONS—FINS

Mullions and Transom Bars shall be provided between adjacent windows where specified.

(In Fenmark or Projected Fenmark Windows, the mullions may be omitted where specified and narrow vertical lines may be secured by bolting the jambs of the windows together.)

(Fins may be used for anchorage on windows having equal leg frame section.)



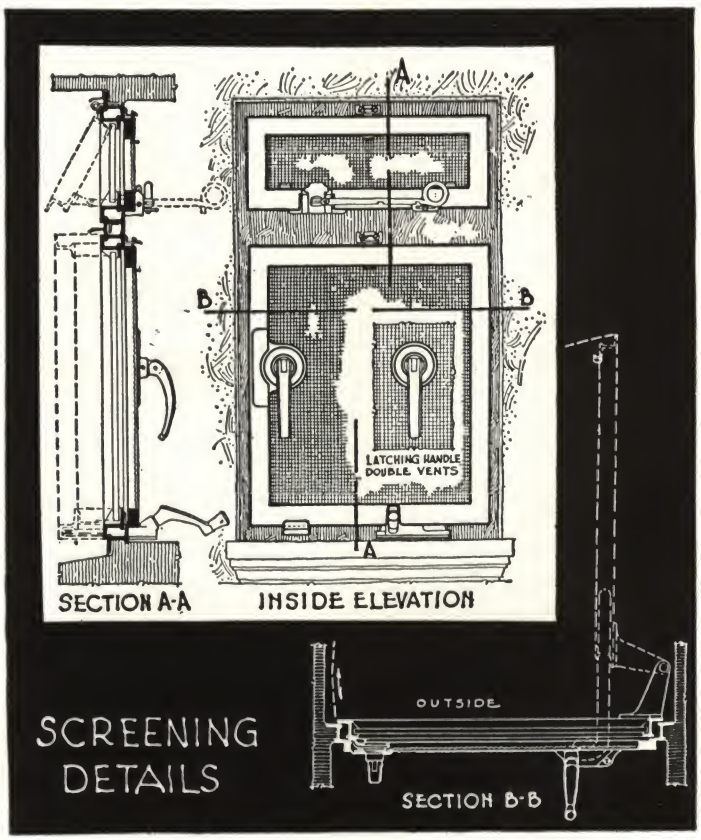
9—SCREENING

(Fenestra Screened Type Windows with Fenestra Flat Screens are recommended for all Fenmark, Fencraft and Custom Windows where screens are required. Flat screens may be used on Projected Fenmark windows. See Section 6.)

Screens for all Screen Type Open Out Ventilators shall lie flat against the inside of the window frame and shall permit complete operation of the ventilator, opening, closing and locking, without touching the screen.

Screens for all Open In Ventilators shall lie flat against the outside of the window frame.

All screens shall be easily attached or removed from the inside. Screen frames shall be steel, containing triangular reinforcement, extending continuously around the frame. Corners shall be butt welded. Screen cloth



shall be 16-mesh 32-gauge bronze wire. Steel frame shall be bonderized, then enameled two coats, one coat baked on. Finish coat shall be gray.

(Screens are available with bronze frames or with aluminum frames and aluminum wire cloth. Also with finer mesh where specified.)

(Non-screened types may be screened by the use of hinged, rolling or sliding screens so positioned as to clear the hardware.)

10—PAINTING

All windows shall receive adequate shop painting to protect them during transportation to the building site.

(Provision should be made for the painting contractor to apply a field coat after erection and before glazing, uniformly applied to thoroughly cleaned surfaces. Final painting should be deferred until about three weeks after glazing to permit the putty to set.)

11—MASTIC

Mastic shall be supplied by the window manufacturer for sealing at masonry sills and at vertical or horizontal connections between windows with UNEQUAL leg frame section; and for sealing the entire perimeter of all windows with EQUAL leg frame section.

12—ERECTION

(Wherever possible, windows should be erected in prepared openings by the window manufacturer after all Mason work has been completed.)

13—GLAZING

All windows shall be glazed on the outside with high grade steel window putty, neatly applied. Each light shall be bed puttied, secured by spring glazing clips furnished by the window manufacturer, and then face puttied.

(Outside putty glazing is recommended in all cases, particularly for Fenmark and Projected Fenmark Windows. Glazing beads can be furnished at extra cost where specified, and, when used, inside glazing is advisable. Plate glass is recommended.)

14—ALUMINUM OR BRONZE WINDOWS

(Fenmark, Projected Fenmark, Fencraft or Custom Built Windows may be secured in extruded aluminum sections equipped with white metal hardware and aluminum framed screens or in bronze sections equipped with bronze hardware and bronze framed screens. Consult the nearest Fenestra Representative.)

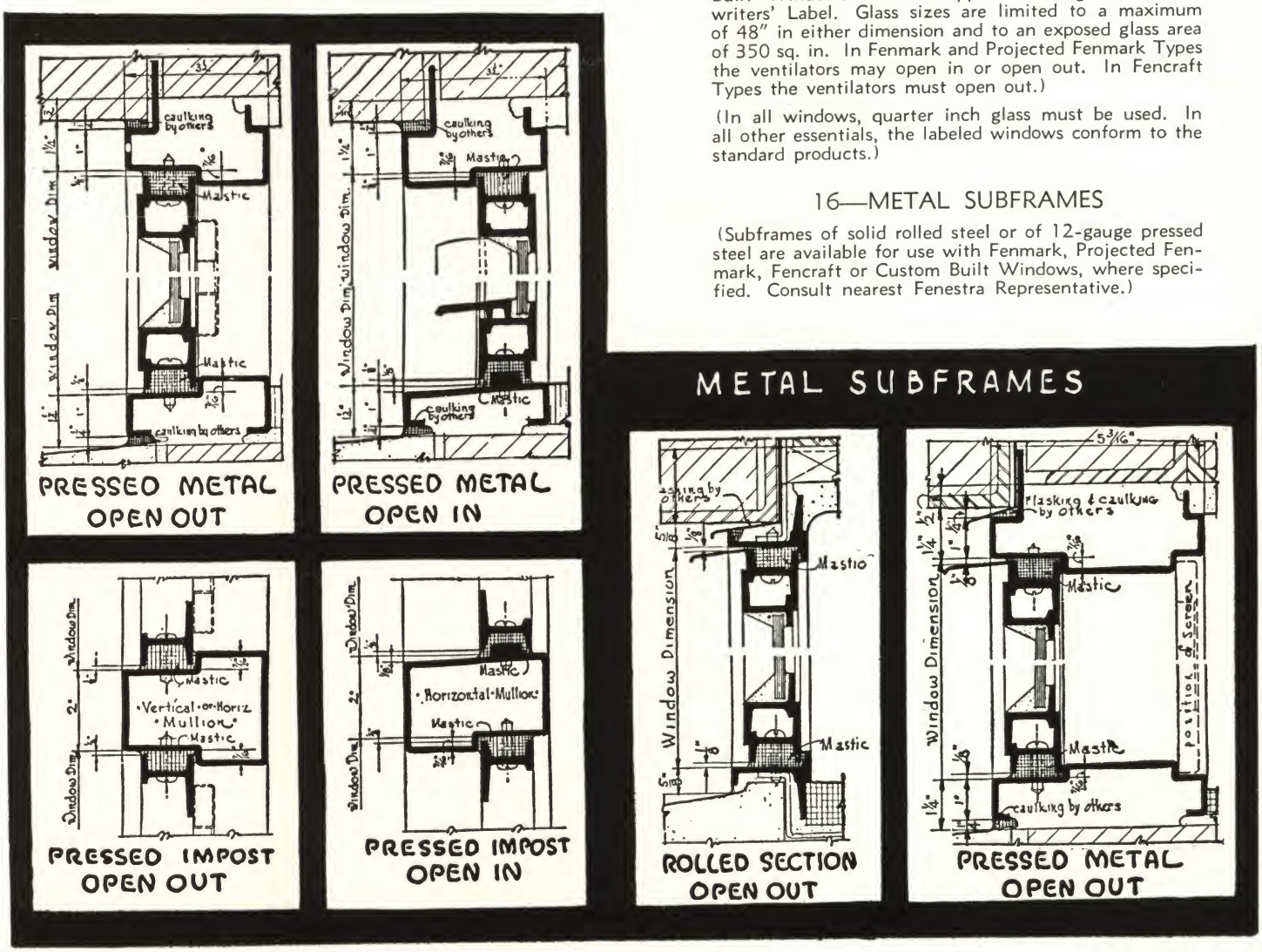
15—UNDERWRITERS' LABEL WINDOWS

(Fenmark, Projected Fenmark, Fencraft and Custom Built Windows can be supplied bearing the Underwriters' Label. Glass sizes are limited to a maximum of 48″ in either dimension and to an exposed glass area of 350 sq. in. In Fenmark and Projected Fenmark Types the ventilators may open in or open out. In Fencraft Types the ventilators must open out.)

(In all windows, quarter inch glass must be used. In all other essentials, the labeled windows conform to the standard products.)

16—METAL SUBFRAMES

(Subframes of solid rolled steel or of 12-gauge pressed steel are available for use with Fenmark, Projected Fenmark, Fencraft or Custom Built Windows, where specified. Consult nearest Fenestra Representative.)



FENMARK WINDOWS

(All General Specifications on Pages 1, 2, 3 and 4 apply)

FENMARK WINDOW WITH
FENESTRA SCREENS
(MUNTINS OMITTED)

Designed for use in Office Buildings, Hospitals and all types of monumental, educational and public buildings.

Vertical lines especially adapted to modern stepped back designs. Windows lend themselves to combination with metal stools and fully or semi-concealed radiation.

Supplied in both Screened and Nonscreened Types.

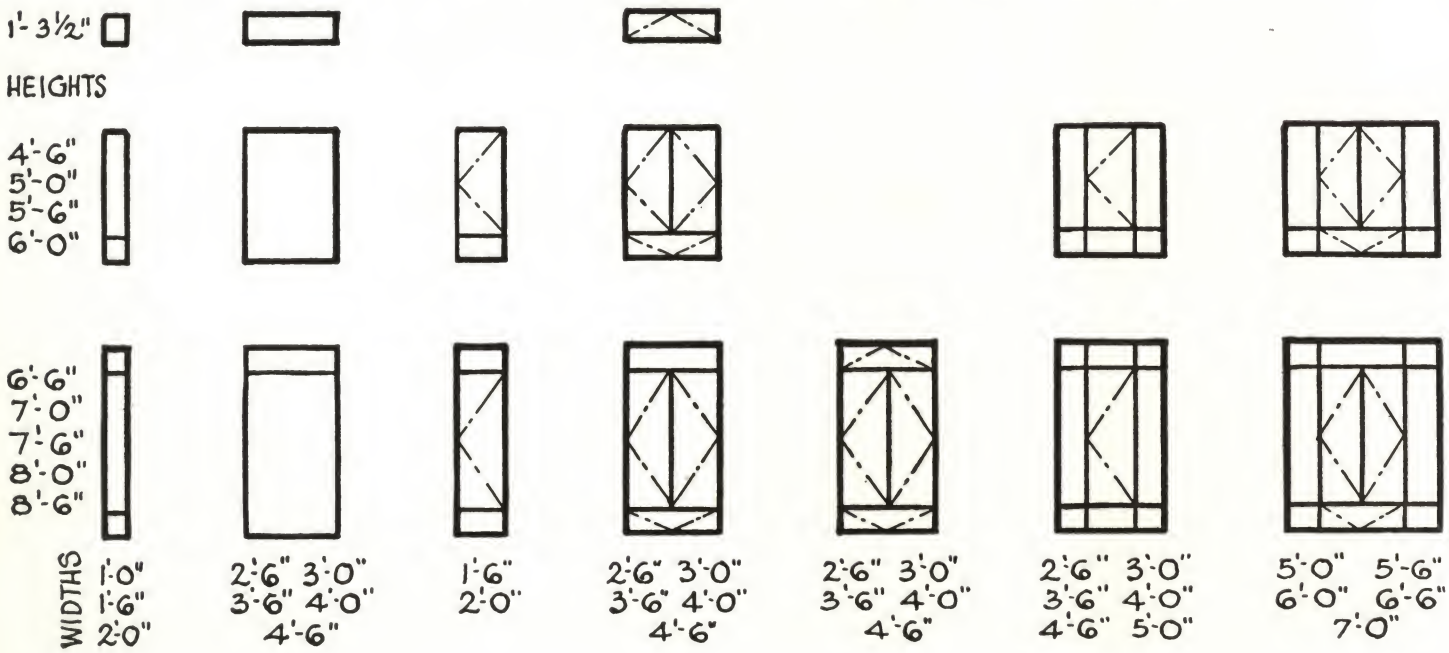
Frame sections are 1 ½" deep from front to back with unequal legs. Frame corners are mortised and tenoned and air hammer riveted. Ventilator sections and muntins are 1 ¼" deep from front to back. Vent corners are electrically butt welded. Muntins often are omitted to permit the use of large single panes of plate glass.

This window features a Projected-In ventilator at the sill which serves as a wind guard, deflecting drafts upward.

Transom Types may be either Projected In or Projected Out. Transoms and sill ventilators may be combined with side hung types by means of transom bars to provide windows of almost any height or width and almost any degree of ventilation up to 100%.

Specification, solid bronze hardware is standard. (See typical designs on Page 2.)

FENMARK WINDOWS ~ TYPES & SIZES



PROJECTED FENMARK WINDOWS

(All General Specifications on Pages 1, 2, 3 and 4 apply except Section 2.)

Designed for use in monumental, educational and public buildings, particularly where weather protection is desired while the ventilators are open. Projected Out Ventilators in an open position form a canopy above the opening. Projected In Ventilators shed water toward the outside.

Frame Sections are 1½" deep from front to back with unequal legs. Frame corners are mortised and tenoned and air hammer riveted. Ventilator Sections and Muntins are 1¼" deep from front to back. Vent corners are electrically butt welded.

Projected Fenmark Windows are similar in construction to Fenmark Types except that all ventilators are of the "projected" type opening in or out as specified.

For operation of ventilators note particularly Section 4 of the General Specifications.

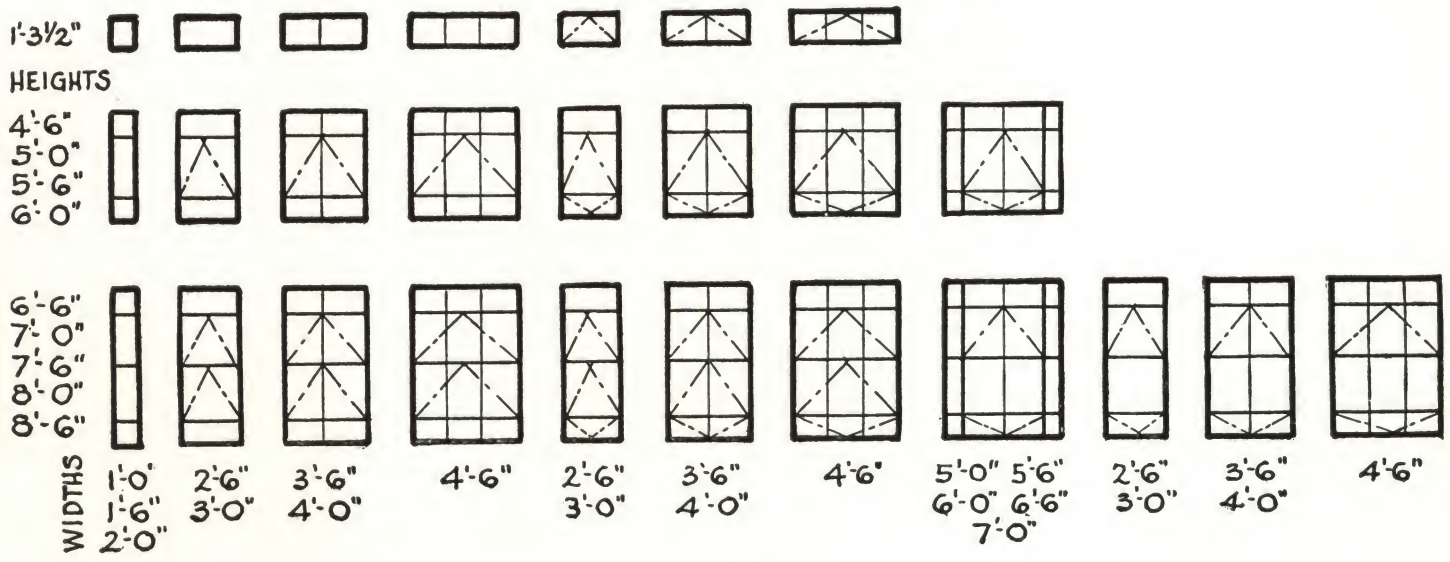
Where screens are desired with Projected Out Ventilators, Fenestra Flat Inside Screens and a 15" Underscreen Stay Adjuster are available at slight extra cost. (See Sections 6 and 9, General Specifications.)

Ventilators usually are arranged so that all glass may be cleaned on both sides from inside the room.

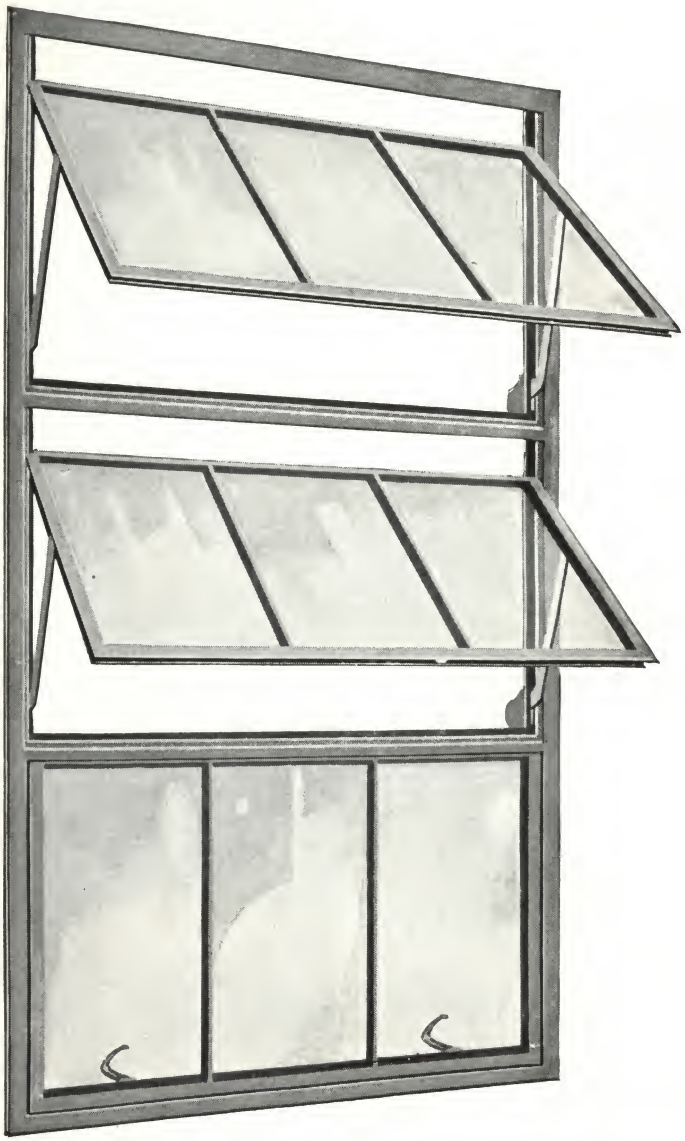
Specification, solid bronze hardware is standard. (See typical designs on Page 2.)

PROJECTED FENMARK WINDOW WITH PROJECTED-OUT AND PROJECTED-IN VENTILATORS

PROJECTED FENMARK — TYPES & SIZES



DALMO-FENMARK WINDOWS



EXTERIOR OF DALMO-FENMARK WINDOW WITH LOWER VENTILATOR CLOSED

(All General Specifications on Pages 1, 2, 3 and 4 apply except Section 2.)

Standard Projected Fenmark Windows with Dalmo operating mechanism designed for 100% ventilation in schools, hospitals, and office type structures where unusual speed, ease and flexibility in opening and closing are essential.

All vents open simultaneously by opening the sill ventilator. The latter may then be closed leaving upper vents open. By reopening the sill vent all vents are automatically reconnected and may be closed by closing the sill vent. No clutch or lever mechanism necessary.

No pressed metal, built-up or factory sections used anywhere. See Section 1 General Specifications.

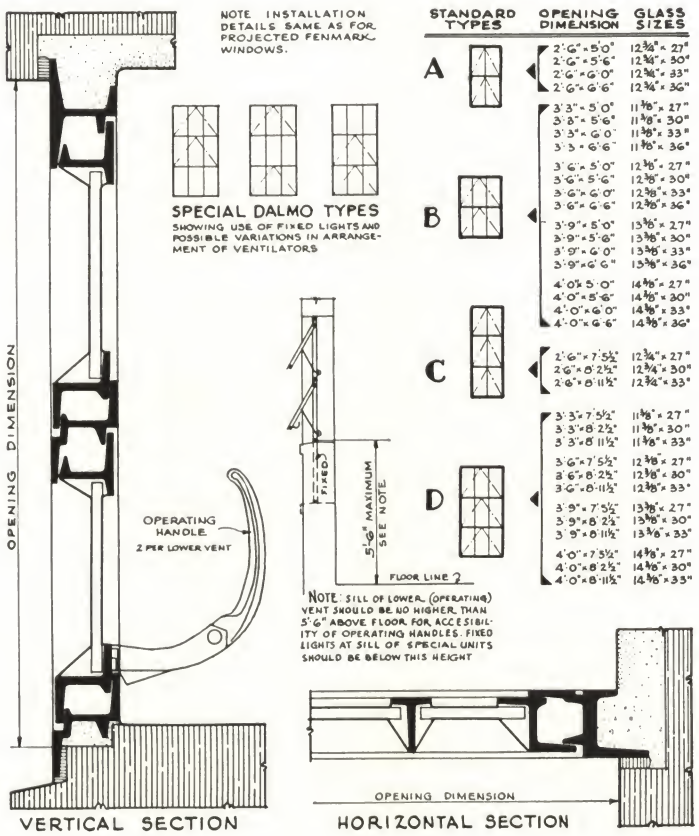
The Dalmo Fenmark is the only window on the market in which ventilators may be operated in unison by means of a mechanism entirely concealed.

Spring steel side arms supporting the upper vents are carried through the frame sections and pivoted into solid steel welded, extension brackets which protrude only $3\frac{1}{16}$" inside the window and are concealed by steel housings. Side arms on sill vents are pivoted to the frame.

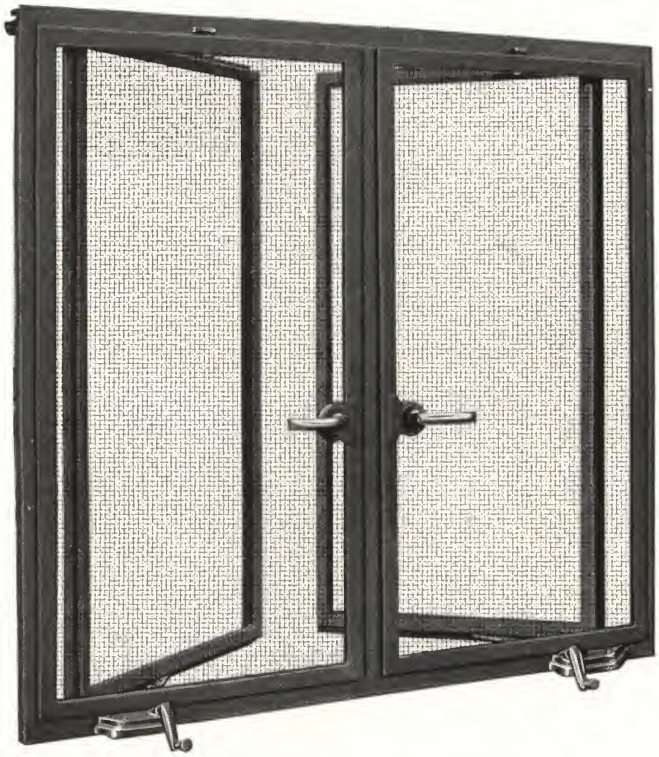
Ventilators are hung on U-shaped, vertically sliding shoes and are connected by concealed connecting bars. A solid bronze trip mechanism is located on each jamb bar to automatically release the lower ventilator after all vents have been opened.

All ventilators are locked in a closed position by two bronze locking handles at the sill of the lower vent.

Each vent may be shaded on its under side to act as an awning. Vents are punched and shade brackets and cord rollers are included.



FENESTRA FENCRAFT CASEMENTS



FENCRAFT SCREEN TYPE CASEMENT WITH FENESTRA FLAT SCREENS

(All General Specifications on Pages 1, 2, 3 and 4 apply except Section 4.)

Designed for use in fine residences, clubs, apartments, theaters, churches, hospitals, dormitories, hotels, fraternity, school and university buildings and all structures where high quality casement windows are applicable.

Supplied in both Screened and Nonscreened Types.

(It is important to determine at the outset whether Screened or Nonscreened Types are to be used.)

Frame and ventilator sections are 1 ¼" deep from front to back. Frame sections have equal legs. Frame and ventilator corners are mitered, electrically butt welded and ground to a smooth finish.

(Frame sections can be equipped with continuous steel fins for anchorage if required.)

Interior muntin bars may be omitted where desired, to accommodate large panes of plate glass or leaded glass panels, or the vertical muntins only may be omitted to provide wide horizontal glass lights used in Spanish and Modern architecture.

Standard side hung ventilators are designed to open out, but certain types may be made to open in, where specified. See details on Page 12.

(For operation of side hung, open out vents see Section 6, General Specifications.)

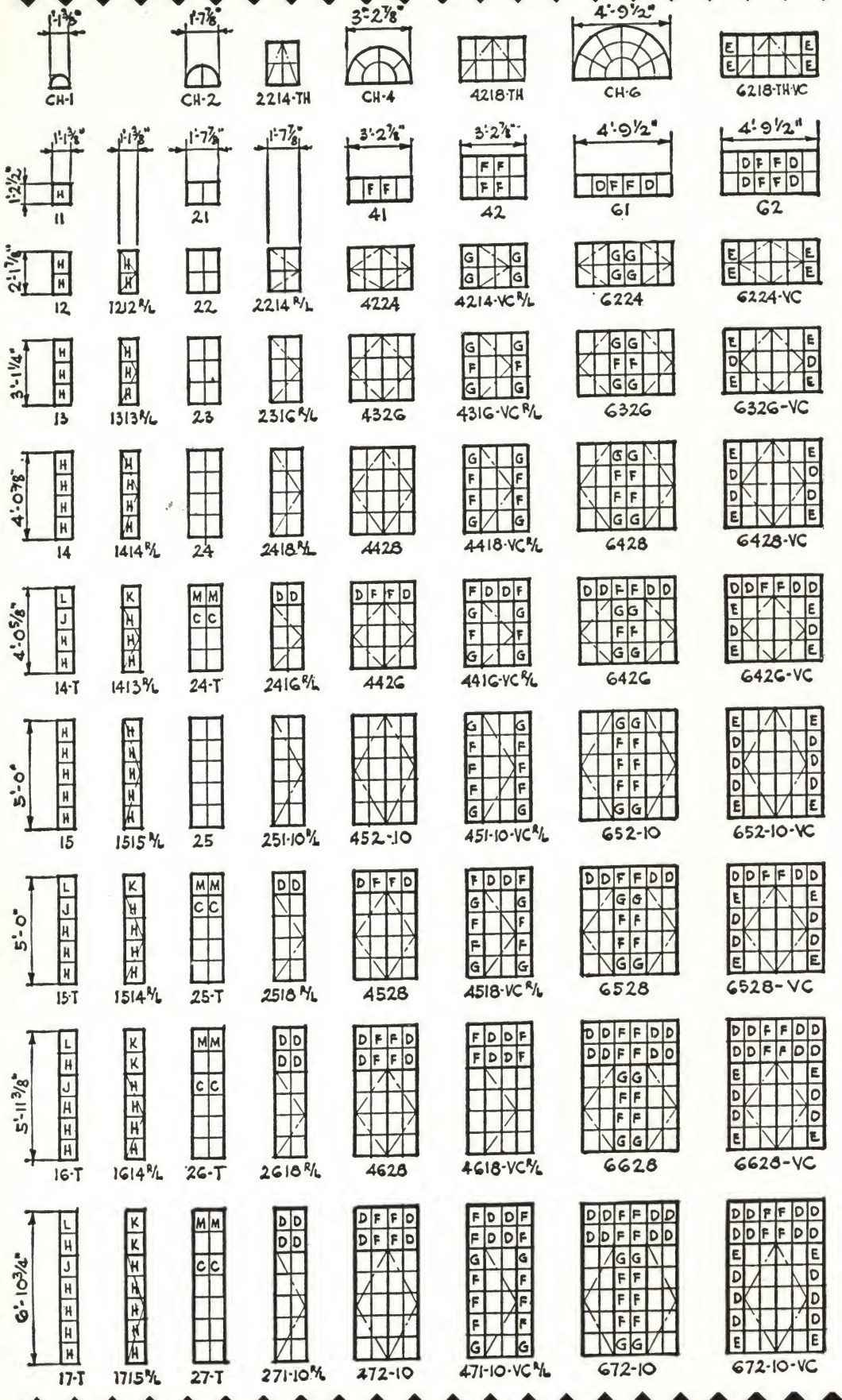
Transom Types, either top hinged to open out or bottom hinged to open in, are available; also bottom hinged, open in, sill ventilators. Transoms and sill ventilators may be combined with side hung units by means of transom bars to provide windows of almost any height and almost any degree of ventilation up to 100%.

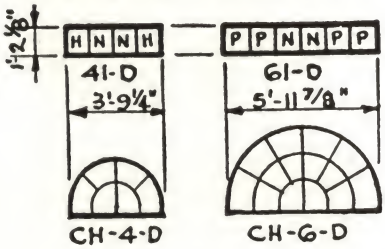
Specification solid bronze hardware is standard. (See typical designs on Page 3.)

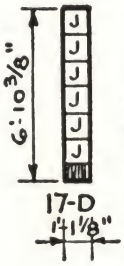
Standard Fencraft Open Out Types are shown on Page 10.

Standard Open In Types are shown on Page 12.

EXTERIOR OF FENCRAFT NON-SCREENED TYPE CASEMENT







FIXED UNITS USED WITH DOORS

SIZES SHOWN ON THESE TYPES ARE WINDOW DIMEN'S. SEE NOTE BELOW.

NOTES

SIZES GIVEN ARE OPENING DIMENSIONS (EXCEPT AS NOTED ABOVE) ALLOWING INSTALLATION CLEARANCE OVER ACTUAL WINDOWS.

ANY TYPE FURNISHED WITH MUNTINS OMITTED WHEN SO SPECIFIED.

R/L INDICATES CASEMENT MAY BE RIGHT OR LEFT HAND. VIEWED FROM OUTSIDE A RIGHT HAND CASEMENT IS HINGED AT RIGHT & A LEFT HAND C'SMT. HINGED AT LEFT.

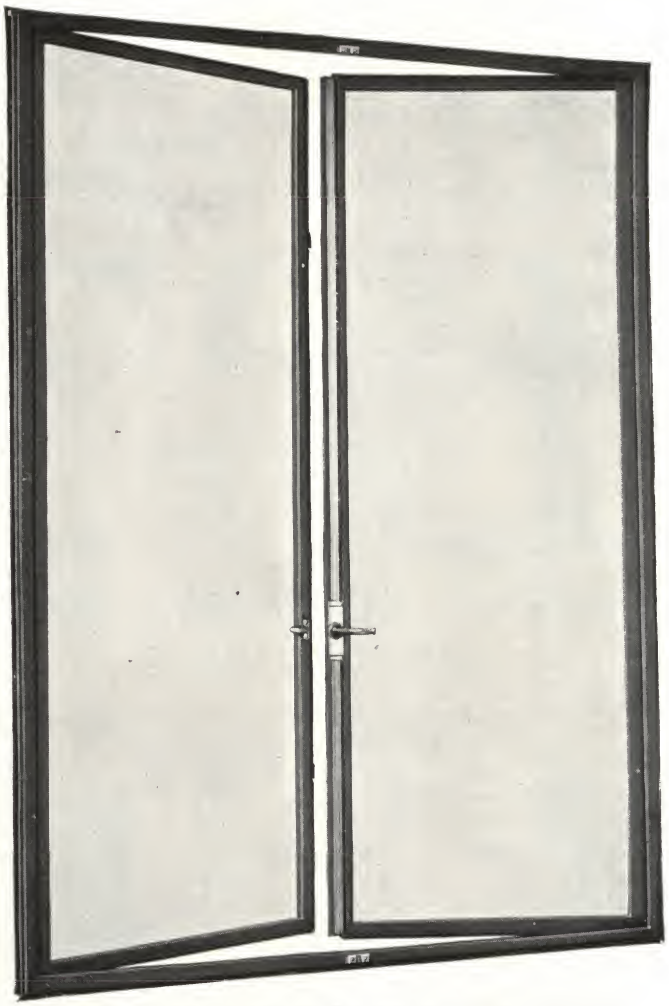
VC = VENT IN CENTER
CH = CIRCULAR HEAD
TH = TO HUNG VENT
T = UNIT WITH SIGHTLINE TRANSOM BAR (SHOWN HEAVY)

GLASS SIZES	
LETTER	SIZE
A	8" × 11"
C	8" × 11⅞"
D	8⅞ × 11"
E	8⅞" × 11⅞"
F	9⅛" × 11"
G	9⅛" × 11⅞"
H	10" × 11"
J	10" × 11⅞"
K	11⅝" × 11"
L	10" × 10⅛"
M	8" × 10⅛"
N	10½" × 11"
P	11½" × 11"

LIGHTS NOT LETTERED ARE 8"×11" (A) EXCEPT IN CH UNITS WHICH ARE CUT TO TEMPLATES.

FENCRAFT STANDARD TYPES A-523

FENESTRA CUSTOM CASEMENTS



CUSTOM CASEMENT, FOLDER TYPE, WITH BRONZE CREMONE BOLT

(All General Specifications on Pages 1, 2, 3 and 4 apply except Section 4.)

A heavy, solid section, steel window designed for use in monumental, public and educational buildings and fine residences, clubs, theaters and hospitals. Especially desirable where large sized units are required as the unusual weight of the sections permits single units, 100% ventilated, up to 3′ wide by 8′ high, and double vented, folder type units (without meeting rail) up to 5′ wide by 8′ high.

Frame and ventilator sections are $1\frac{9}{16}$″ deep from front to back. Frame sections have equal legs. Frame and vent corners are mitered and electrically butt welded.

(Frame sections can be equipped with continuous steel fins for anchorage if specified.)

(Large, single panes of plate glass usually are used, one pane to each swing leaf, but muntins can be supplied where specified.)

Made in both Screened and Nonscreened Types but in Screened Types the vertical meeting rail always is included. (Folder Types must be screened by sliding, rolling or hinged screens.)

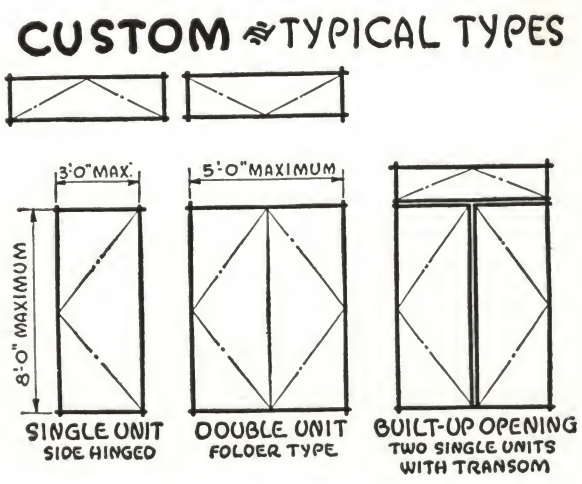
Side hung ventilators usually are designed to open out but may be designed to open in if so specified.

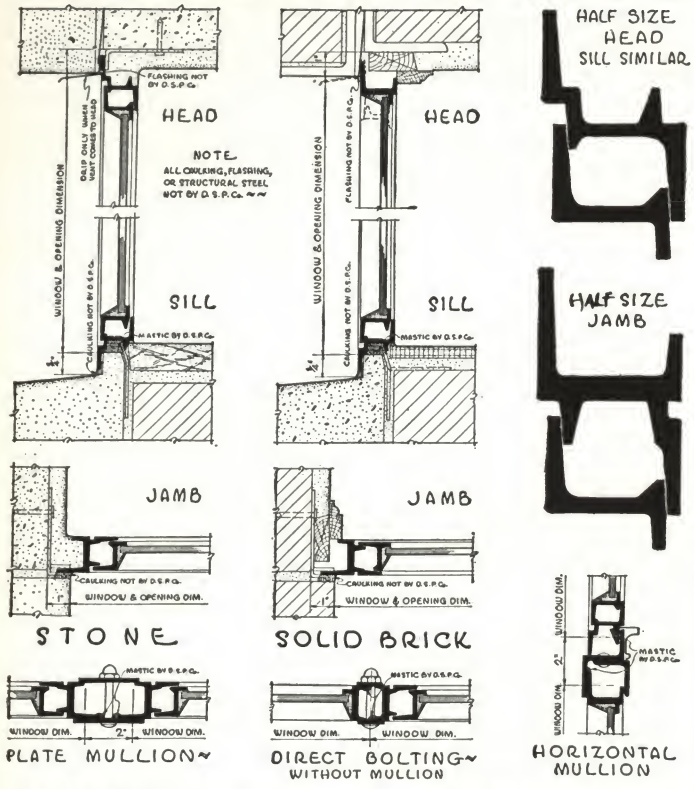
Transom Types, projected, top hinged to open out or bottom hinged to open in, are available—also bottom hinged, open-in sill ventilators. Transoms and sill vents may be combined with side hung units by means of transom bars to provide windows of almost any height or width and almost any degree of ventilation up to 100%.

Specification solid bronze hardware with Coinage finish is always used unless otherwise specified. (See Page 2, General Specifications.)

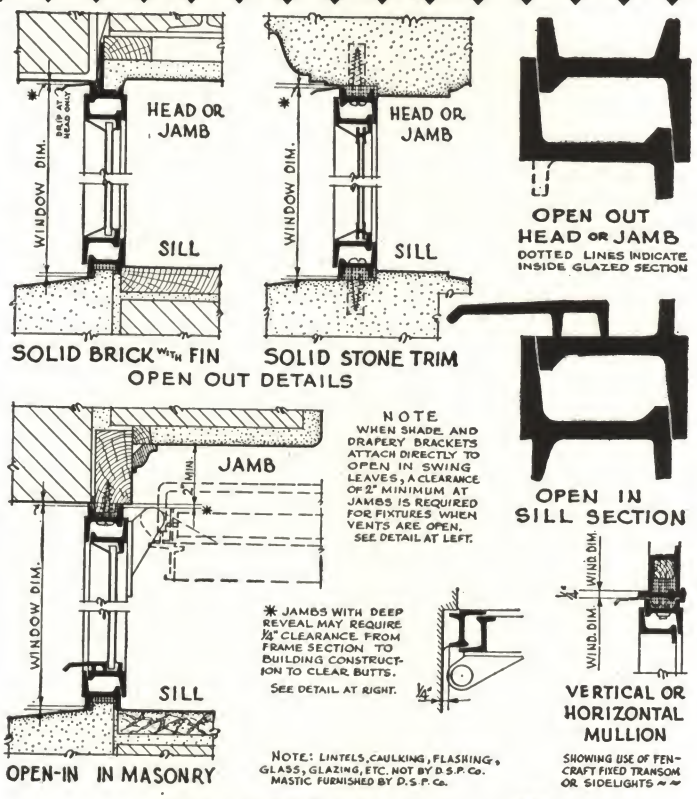
(For single ventilators over 5′ high and for single units with vertical centers more than 6′ 3″ above the floor, Double Locking Devices are recommended.)

Double Ventilated Units (Folder Type) are equipped with surface type cremone bolt attached to the active leaf and a solid bronze finger pull attached to the opposite leaf.



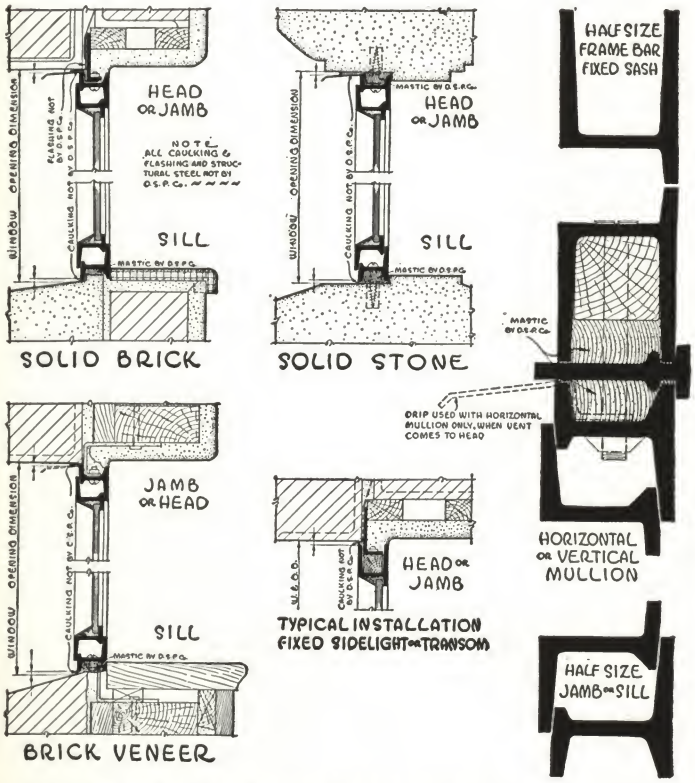


FENMARK AND PROJECTED FENMARK

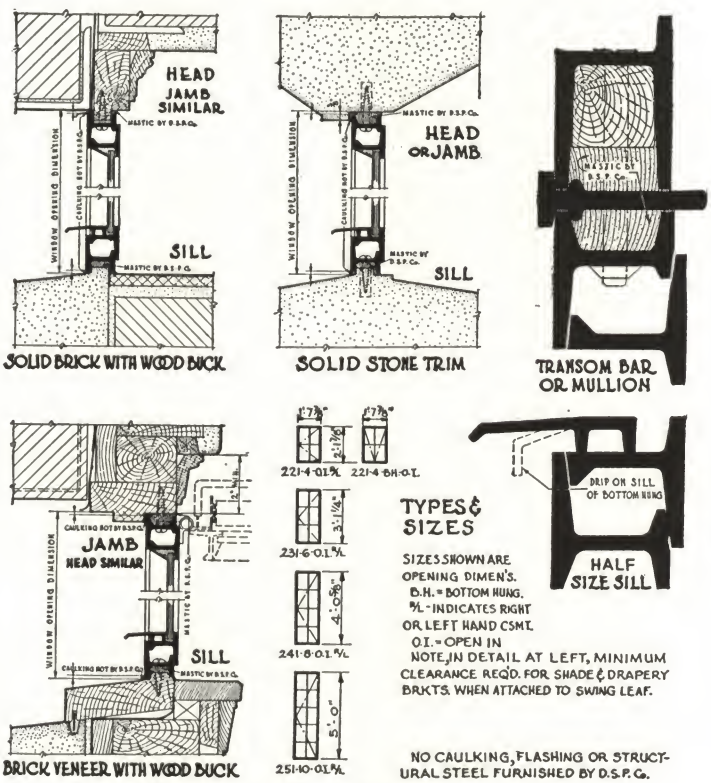


NOTE: LINTELS, CAULKING, FLASHING, GLASS, GLAZING, ETC. NOT BY D.S.P. Co. MASTIC FURNISHED BY D.S.P. Co.

CUSTOM BUILT



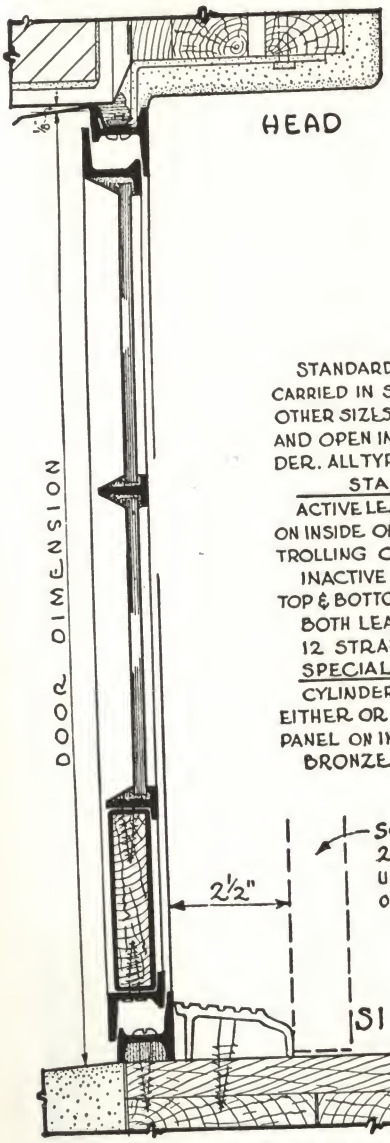
FENCRAFT ~ OPEN OUT



NO CAULKING, FLASHING OR STRUCTURAL STEEL FURNISHED BY D.S.P.G.

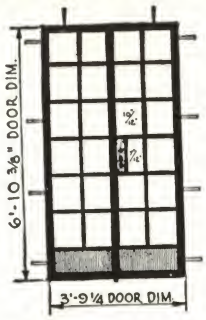
FENCRAFT ~ OPEN IN

STANDARD ~ 1¼" SECTION



SCREEN DOOR NOT BY D.S.P.Co.. 2½" MIN. CLEARANCE IS REQUIRED WITH OR WITHOUT USE OF THRESHOLD

VERTICAL SECTION



STANDARD DOOR
STOCK SIZE

STANDARD DOORS TO OPEN OUT ARE CARRIED IN STOCK IN 3'-9½" × 6'-10½" OPNG SIZE. OTHER SIZES NOT TO EXCEED 5'-0" × 7'-6" AND OPEN IN TYPE FURNISHED ON ORDER. ALL TYPES OUTSIDE PUTTY GLAZED.

STANDARD EQUIPMENT

ACTIVE LEAF - LOCK WITH THUMB TURN ON INSIDE ONLY AND WITH HANDLE CONTROLLING CONCEALED CREMONE BOLT.

INACTIVE LEAF - EXPOSED BRONZE TOP & BOTTOM SHOT BOLTS.

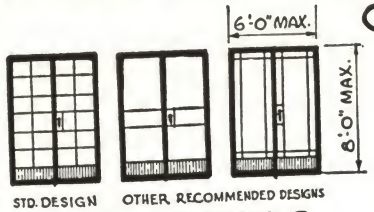
BOTH LEAVES - FRICTION HINGES.

12 STRAP ANCHOR CLIPS.

SPECIAL EQUIPMENT AVAILABLE

CYLINDER LOCK WITH CYLINDERS ON EITHER OR BOTH SIDES; DUMMY LOCK PANEL ON INACTIVE LEAF.

BRONZE THRESHOLD. (AUXILIARY)



CUSTOM DOORS
SEE NOTE REGARDING MUNTINS BELOW

MUNTINS MAY NOT BE ENTIRELY ELIMINATED. LOCK PANEL MUST BE FRAMED BY MUNTINS (AS IN RECOMMENDED DESIGNS - CUSTOM DOORS) TO PREVENT WEAKENING GLASS BY NOTCHING.

CUSTOM DOORS TO OPEN OUT OR IN ARE BUILT TO ORDER OF DESIGN & SIZE DESIRED NOT TO EXCEED 3'-0" × 8'-0" FOR SINGLE DOOR OR 6'-0" × 8'-0" FOR DOUBLE. THEY MAY BE INSIDE OR OUTSIDE GLAZED, WITH PUTTY OR WITH GLAZING BEADS.

STANDARD EQUIPMENT

ACTIVE LEAF - LOCK WITH THUMB TURN ON INSIDE ONLY AND WITH HANDLE CONTROLLING CONCEALED CREMONE BOLT.

INACTIVE LEAF - EXPOSED BRONZE TOP & BOTTOM SHOT BOLTS.

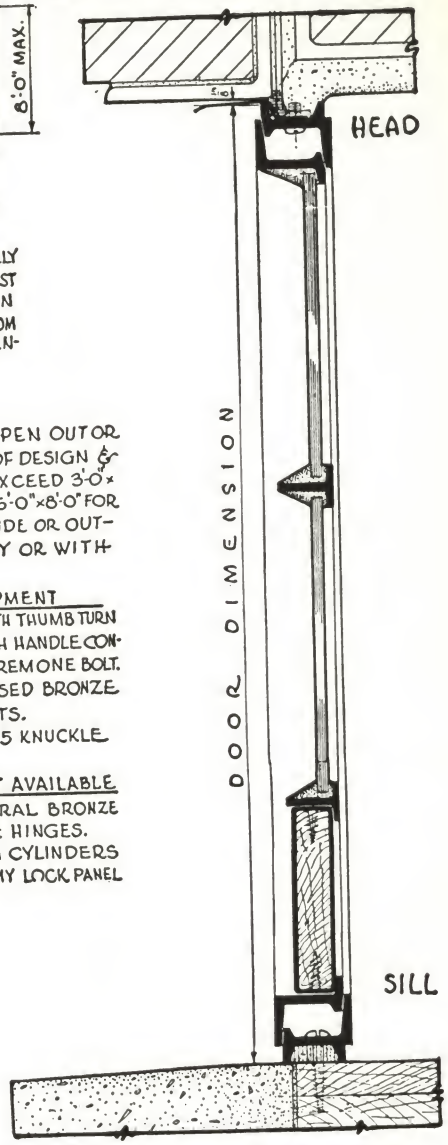
BOTH LEAVES - 3½" 5 KNUCKLE HINGES. (STEEL)

SPECIAL EQUIPMENT AVAILABLE

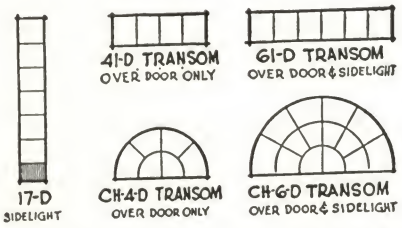
AUXILIARY OR INTEGRAL BRONZE THRESHOLD. BRONZE HINGES.

CYLINDER LOCK WITH CYLINDERS ONE OR BOTH SIDES; DUMMY LOCK PANEL ON INACTIVE LEAF.

CUSTOM ~ 1 9/16" SECTION



• VERTICAL SECTION •



SIDELIGHTS & TRANSOMS

FENWROUGHT

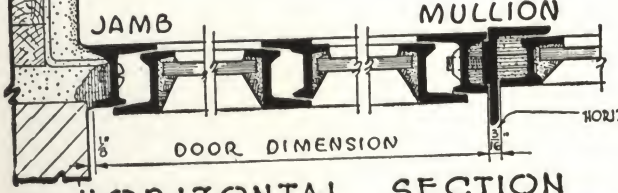
TYPE	WIDTH	HEIGHT
41-D	3'-9¼"	1'-1 1/16"
61-D	5'-11¾"	1'-1 1/16"
17-D	1'-1 1/16"	6'-10 3/8"
CH-4-D	3'-9¼"	2'-0¾"
CH-6-D	5'-11¾"	3'-2"

FENCRAFT

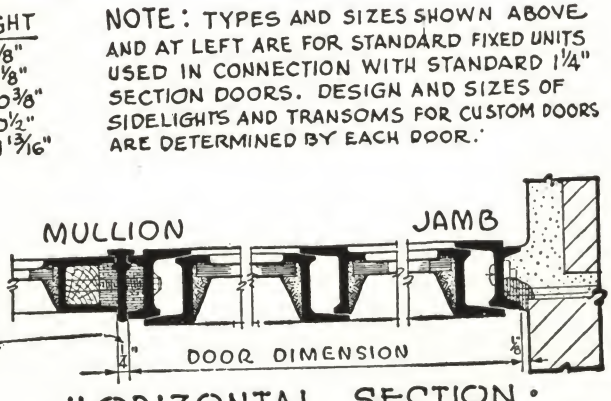
TYPE	WIDTH	HEIGHT
41-D	3'-9¼"	1'-2⅛"
61-D	5'-11⅞"	1'-2⅛"
17-D	1'-1⅛"	6'-10⅜"
CH-4-D	3'-9¼"	2'-0½"
CH-6-D	5'-11⅞"	3'-1 3/16"

SIZES ARE WINDOW DIMS.

NOTE: TYPES AND SIZES SHOWN ABOVE AND AT LEFT ARE FOR STANDARD FIXED UNITS USED IN CONNECTION WITH STANDARD 1¼" SECTION DOORS. DESIGN AND SIZES OF SIDELIGHTS AND TRANSOMS FOR CUSTOM DOORS ARE DETERMINED BY EACH DOOR.



HORIZONTAL SECTION
SHOWING DOOR COMBINED WITH FENWROUGHT SIDELIGHT



• HORIZONTAL SECTION •
SHOWING DOOR COMBINED WITH FENCRAFT SIDELIGHT

CASEMENT DOOR DETAILS B-304

FENESTRA FENWROUGHT CASEMENTS

SCREENED FENWROUGHT CASEMENTS

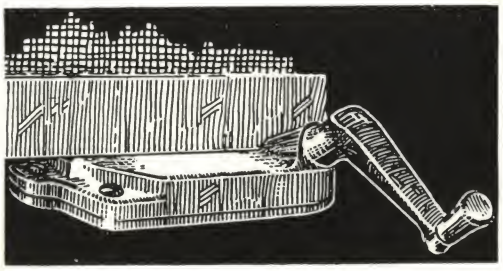
Solid, rolled steel sections, 1″ deep. Corners mitered and electrically butt-welded. Continuous, two-point, flat contact and double baffle weathering.

Swing leaves hinged at the top or at the side to open out.

Fenwrought Casement Complete with Fenestra Screen

Hinges are of solid rolled steel with solid bronze pins and bronze bushings. "Cleaning" hinges provide about 4½″ opening at the jambs for cleaning glass from inside the room. Handle brackets are of solid rolled steel or steel plate solidly welded to the casement frame.

Handles are solid bronze or bronze finish, operating through the screen. Side hung leaves have Roto-Adjusters at the sill, operating under the screen without touching it. Adjuster handles are bronze or bronze finished as specified. Transoms have bronze, notched stay adjusters operating through the screens.



Installation is made easier by use of Fenestra Wood Surrounds supplied as specified for attachment to casements in a bed of mastic before erection in the opening.

One dip coat of gray lead and oil paint is applied before shipment. Glass sizes are shown on Page 15. We recommend ⅛″ or $\frac{3}{16}$″ plate set in bed putty and held by spring glazing clips supplied without extra cost. Only steel window putty should be used.

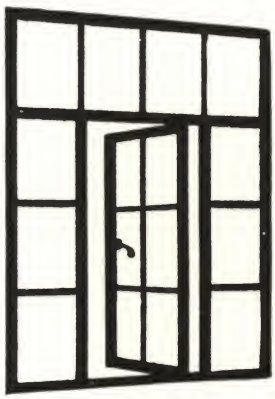
Frames are drilled at jambs near the head for attachment of standard shade and drapery brackets.

Fenestra Flat Screens with cold rolled and rust-proofed steel frames and 16 mesh oxidized bronze wire cloth, fit inside the casement and are held by clips. Easily removed (from inside only). Painted two coats of gray enamel, the first coat baked on. Rewireable.

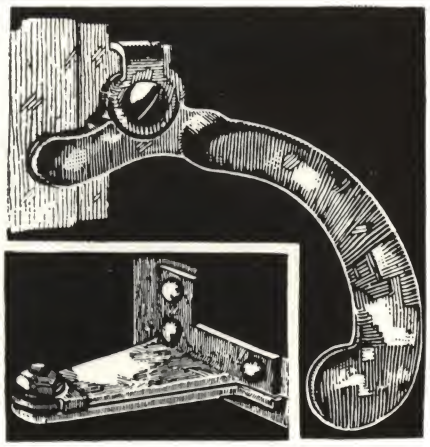
Tiltin Windows, one-light high, opening in at the top are supplied in types and sizes suitable for attachment to the sills of Fenwrought types but may be used individually if desired. They act as baffles at the sill deflecting air currents upward. Can be left open even in rainy weather. Screened on the outside if specified.

STANDARD FENWROUGHT CASEMENTS

Standard Fenwrought Casements are exactly like Screened Fenwrought types in all respects except hinges, hardware and screens. Side hung leaves have heavy, cleaning friction hinges with oil-impregnated bronze bushing washers, bronze studs and nuts. By adjusting the nuts, friction may be increased or decreased. Top hung leaves have sherardized steel hinges with bronze pins.



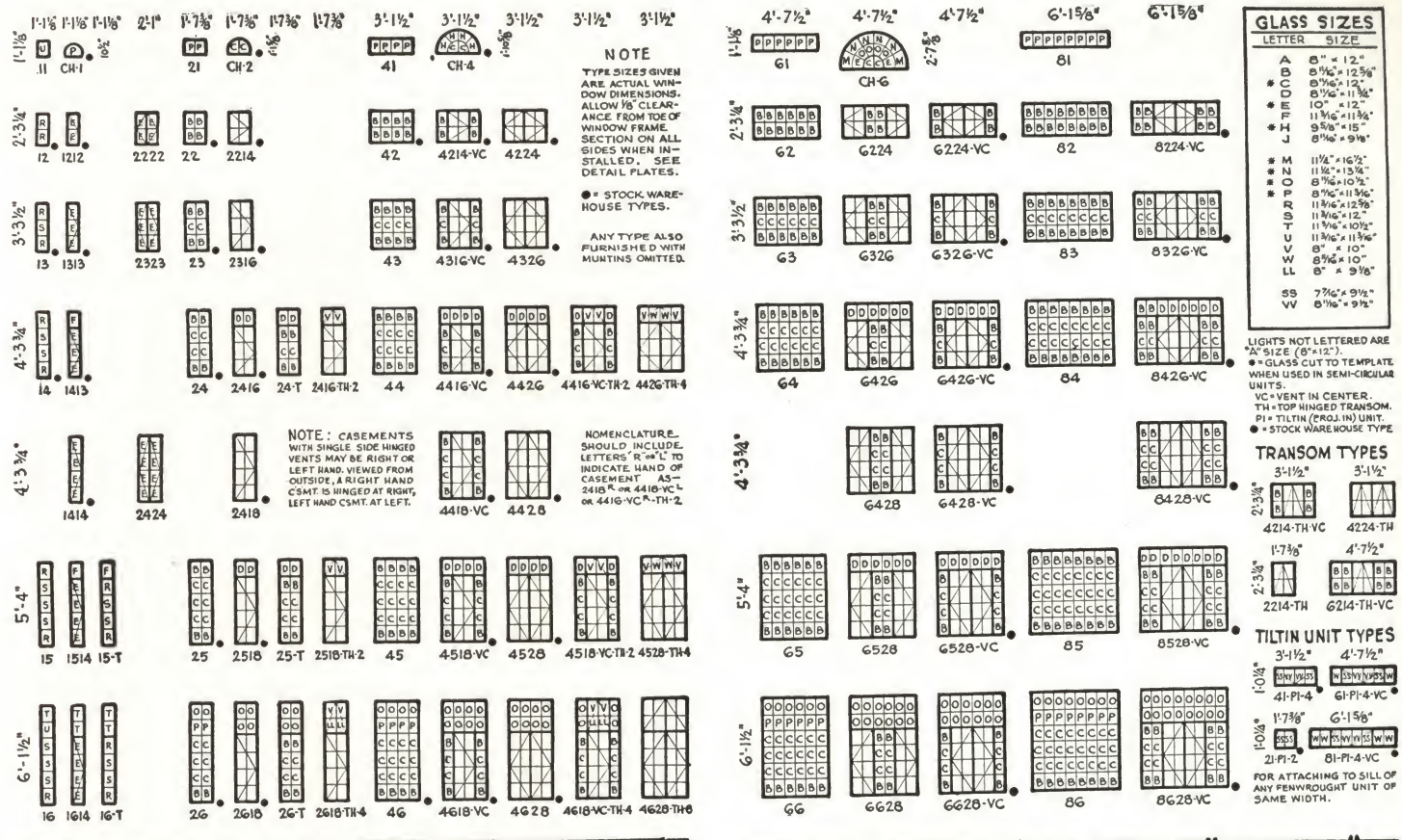
Standard Type

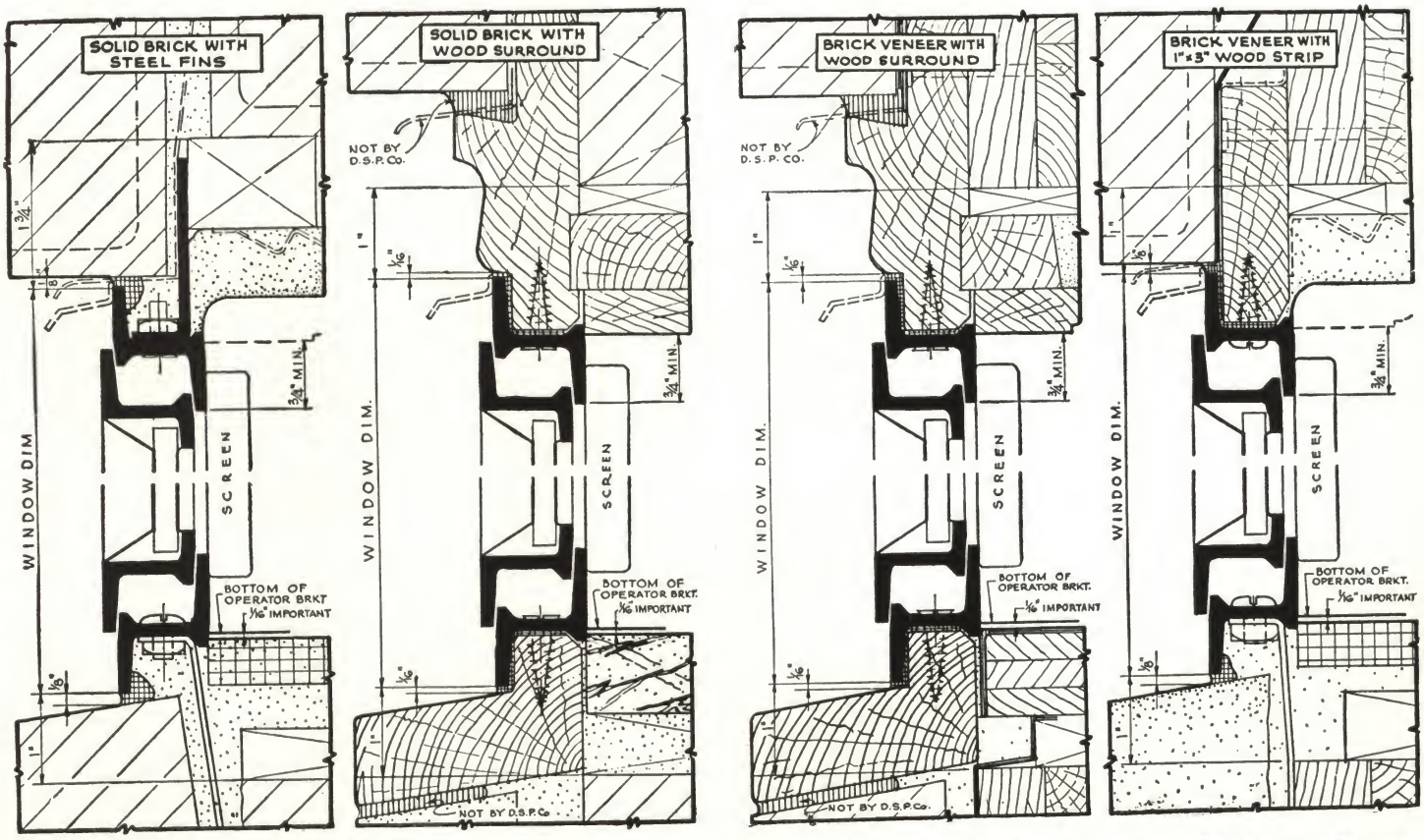


Solid rolled steel brackets are welded to each swing leaf, each bracket carrying a drawn steel stud on which the locking handle is mounted and firmly attached by a friction clevis, screw and lock-washer, to prevent rattle. The locking handles themselves are of rust-proofed iron—solid bronze if specified—and are flat in design so that the screen and the casement swing leaf may be closed simultaneously without interference.

Hinged Screens set flat against the inside of the casement and swing on brass top and bottom studs. Screen frames are cold rolled bonderized steel tubes with corners mitered, re-inforced and butt-welded with extending flanges to permit clearance of hardware.

Frame painted one coat of baked enamel. Cloth is 16-mesh oxidized bronze wire. All screens removable. Rewirable. Rolling screens available if desired.





FENWROUGHT TYPES — ½ SIZE DETAILS . . A-333

Where screens are to be used with roller shades or drapery brackets, casements with one-light high fixed transoms are desirable. Otherwise, shades and drapery must be attached in such a way as to permit clearance for the swing-in screen.

ECONOMY FENWROUGHT CASEMENTS

Fenwrought Casements, Economy Type, are supplied in the types and sizes shown at right. On all types except those which are 2-panes high, a fixed light is used between the head of the swing leaf and the head of the window. This is due to the fact that where screens are used and also roller shades or drapery brackets, the fixed transom obviates the danger of interference. Where a fixed transom is not possible, shades and drapery must be attached in such a way as to allow clearance for the in-swinging screen.

The arrangement of the swing leaves and the omission of vertical muntins result in unusually wide glass lights and in the accentuation of horizontal lines popular in structures of "modernistic" design. The same treatment harmonizes well with Spanish or Italian architecture.

Economy Type

"Economy" Type Casements are exactly the same as "Standard" Types, both in material and in methods of construction. The same cleaning, friction hinges are used; the same flat type locking handles and inside swing-in screens are designed so that both the screen and the swing leaf may be closed simultaneously.

A considerable saving over the cost of "Standard" types is possible by the use of "Economy" types, however, and this saving applies not only to the cost of the window itself but also to many of the installation costs, notably the cost of glass and glazing.

Since the overall dimensions of "Economy" Types are the same as the dimensions of "Standard" Types, it is often advantageous to combine the two in the same building—in the same room—or even in the same window opening. In such combinations the "Standard" types usually are specified "Vertical muntins omitted."

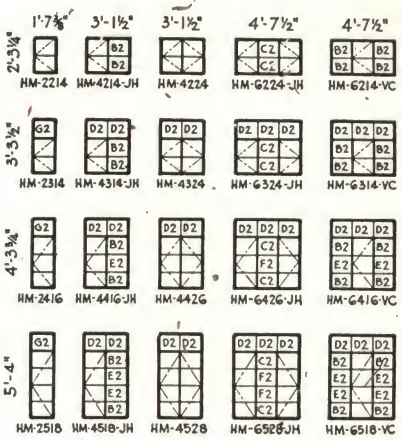


TABLE OF GLASS SIZES			
MARK	SIZE	MARK	SIZE
A2	16 5/16" × 12"	E2	17 1/16" × 12"
B2	17 1/16" × 12 5/8"	F2	17 7/8" × 12"
C2	17 7/8" × 12 5/8"	G2	17 1/2" × 11 3/4"
D2	17 7/16" × 11 3/4"		

LIGHTS NOT LETTERED ARE "A2"

NOTE

CASEMENTS WITH SINGLE VENTS MAY BE EITHER RIGHT OR LEFT HAND, DEPENDING ON SWING OF VENT DESIRED. WHEN VIEWED FROM THE OUTSIDE, A RIGHT HAND CASEMENT HAS VENT HINGED AT RIGHT AND A LEFT HAND HAS VENT HINGED AT LEFT.

OFFSET VENTS (AS IN TYPE HM-4518-JH) MUST ALWAYS BE HINGED AT THE JAMB OF FRAME.

NOMENCLATURE SHOULD INCLUDE THE LETTERS "R" or "L" TO INDICATE HAND AS: HM-4416-JH^{R} OR HM-G518-VC^{L}

VC = VENT IN CENTER.

JH = VENT HINGED AT JAMB OF UNIT

Combinations of various units may be made just as with "Standard" units, by using mullions or transom bars. Such combinations can be formed to fill almost any desired opening of unusual width or height.

FENESTRA CASEMENT DOORS

Fenestra Casement Doors in standard sizes are designed for use individually or combined with Fenwrought side-light and transom types.

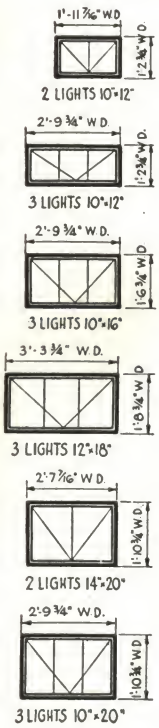
Doors are designed with double swing-leaves opening in or out as specified. Glazed from the outside. Have 16-gauge double kick plates with wooden sound deadeners and close-in friction butts. Thresholds of extruded bronze are available at extra cost.

Hardware is of bronze. Handles on both sides of the active leaf operate a concealed bronze cremone bolt. Bronze top and bottom shot bolts are supplied on the inactive leaf.

A bronze thumb turn is supplied on the inside only.

Screen doors are not supplied.

FENESTRA BASEMENT WINDOWS



Built from Casement sections. Both frame and ventilator pivot ended and welded at all four corners. Two point flat contact weathering all around the opening when vent is closed. Weather protected even when open.

Vents carried on steel balance arms, open to any one of three positions.

Easily removable when desired. Spring latch at head easily operated from floor by a 10" operating rod. A 14-gauge steel fin welded outside each jamb member imbeds in the masonry and forms a guide for mason in laying up both the inside and the outside of the wall.

Steel framed, bronze mesh screen available where specified. Attached in a jiffy with an ordinary screw driver.

Vertical mullions may be had for joining two or more windows side by side in the same opening.

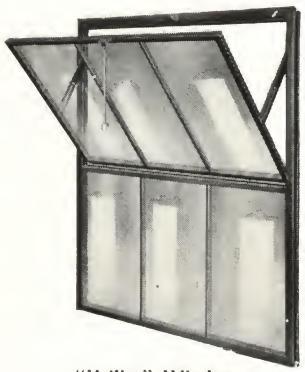
FENESTRA UTILITY WINDOWS

Made of casement sections with the lower lights fixed. The ventilator is one-light high, tilts in at the top and is held by side arms. A spring catch at the head automatically locks the window when closed.

Made in one size only—3' 3¾" in width by 3' 7¼" in height.

Especially adapted to provide light in basements where houses are set close to the grade. The lower panes extend below the grade and a grating over the areaway makes the window appear one-light high as viewed from the outside.

Utility Windows are also desirable for use in private garages, public garages, filling stations, stores, shops and farm buildings. The tilt-in ventilator does not interfere with the use of space directly below the window and it admits abundant ventilation without any direct drafts.

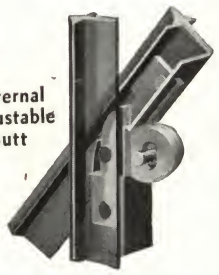


"Utility" Window

FENESTRA PIVOTED WINDOWS

Cam Handle and Stay Bar

Patented Joint



External Adjustable Butt

Fenestra Horizontally Pivoted Windows are suited to every type of industrial building, offering permanent fireproof construction, maximum daylight, and great flexibility as to number and location of ventilators.

Sections are solid rolled steel with Vertex Profiles, 1 3/8" deep from front to back; muntins interlocked by Fenestra joint which increases strength at point of intersection. Ventilators weather with a continuous, 2-point, flat contact on all four sides and are hung on external adjustable, solid rolled steel butts located 2" above center.

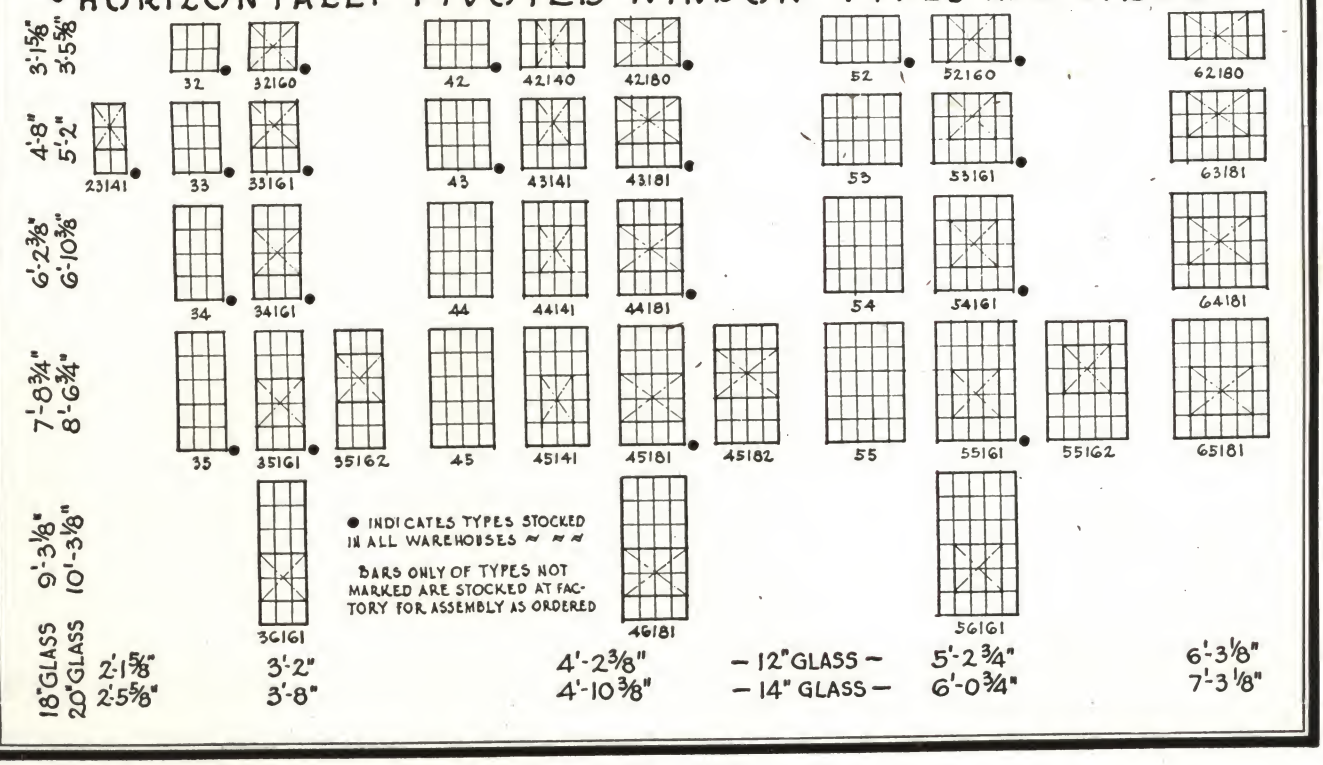
Ventilators are equipped with solid rolled Z-bar brackets for hardware attachment and usually equipped with a cam handle for locking and a notched stay bar for holding the ventilator open. The stay may be eliminated, using a chain controlled handle or spring catch.

Fenestra Pivoted Windows may be supplied with the Underwriters' label, requiring the use of continuous angles for glazing and subject to some limitations in unit and glass sizes.

Stock types are carried in warehouses in principal distribution centers.

Fenestra Horizontally Pivoted Window Type 44181

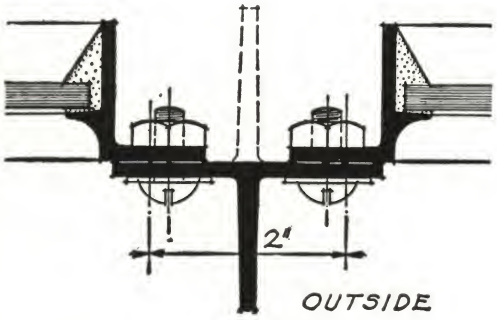
• HORIZONTALLY PIVOTED WINDOW TYPES AND SIZES •

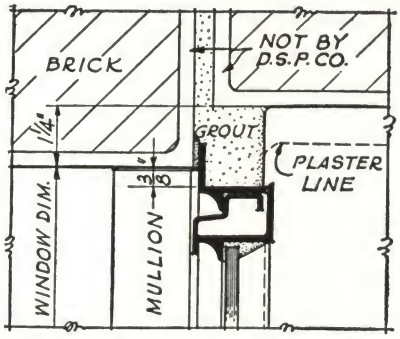


SYMMETRICAL COMBINATIONS

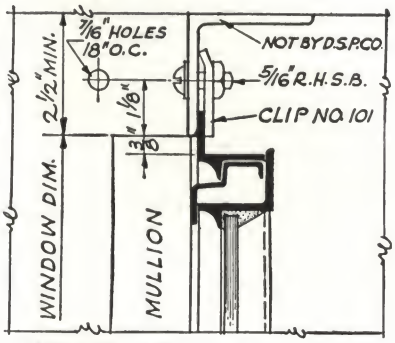
OPENING DIMENSIONS				NO. UNITS IN OPENING	NO. LIGHTS IN OPENING	ARRANGEMENT OF UNITS IN OPENING. FIGURES INDICATE THE NUMBER OF LIGHTS IN WIDTH OF EACH UNIT.
18" HEIGHTS		20" HEIGHTS				
PANES	DIM	PANES	DIM.			
2	3'-1 5/8"	2	3'-5 5/8"			
3	4'-8"	3	5'-2"			
4	6'-2 3/8"	4	6'-10 7/8"			
5	7'-8 1/4"	5	8'-6 3/4"			
6	9'-3 1/8"	6	10'-3 1/8"			
7	10'-9 1/2"	7	11'-11 1/2"			
12" WIDTHS	14" WIDTHS					
* 2'-1 5/8"	* 2'-5 5/8"			1	2	2
3'-2"	3'-8"			1	3	3
4'-2 3/8"	4'-10 3/8"			1	4	4
4'-5 1/4"	5'-1 1/4"			2	4	2,2
5'-2 3/4"	6'-0 3/4"			1	5	5
6'-3 1/8"	7'-3 1/8"			1	6	6
6'-6"	7'-6"			2	6	3,3
8'-6 3/4"	9'-10 3/4"			2	8	4,4
9'-10"	11'-4"			3	9	3,3,3
10'-7 1/2"	12'-3 1/2"			2	10	5,5
10'-10 3/8"	12'-6 3/8"			3	10	3,4,3
11'-10 3/4"	13'-8 3/4"			3	11	3,5,3
11'-10 3/4"	13'-8 3/4"			3	11	4,3,4
12'-8 1/4"	14'-8 1/4"			2	12	6,6
12'-11 1/8"	14'-11 1/8"			3	12	4,4,4
13'-2"	15'-2"			4	12	3,3,3,3
13'-11 1/2"	16'-1 1/2"			3	13	4,5,4
13'-11 1/2"	16'-1 1/2"			3	13	5,3,5
14'-11 1/8"	17'-3 1/8"			3	14	4,6,4
14'-11 1/8"	17'-3 1/8"			3	14	5,4,5
15'-2 3/4"	17'-6 3/4"			4	14	3,4,4,3
16'-0 1/4"	18'-6 1/4"			3	15	5,5,5
16'-0 1/4"	18'-6 1/4"			3	15	6,3,6
16'-6"	19'-0"			5	15	3,3,3,3,3
17'-0 5/8"	19'-8 5/8"			3	16	5,6,5
17'-0 5/8"	19'-8 5/8"			3	16	6,4,6
17'-3 1/2"	19'-11 1/2"			4	16	4,4,4,4
17'-3 1/2"	19'-11 1/2"			4	16	3,5,5,3
17'-6 3/8"	20'-2 3/8"			5	16	3,3,4,3,3
18'-1"	20'-11"			3	17	6,5,6
18'-6 3/4"	21'-4 3/4"			5	17	3,4,3,4,3
19'-1 3/8"	22'-1 3/8"			3	18	6,6,6
19'-4 1/4"	22'-4 1/4"			4	18	3,6,6,3
19'-4 1/4"	22'-4 1/4"			4	18	4,5,5,4
19'-7 1/8"	22'-7 1/8"			5	18	3,4,4,4,3
20'-7 1/2"	23'-9 1/2"			5	19	3,5,3,5,3
21'-5"	24'-9"			4	20	5,5,5,5
21'-5"	24'-9"			4	20	4,6,6,4
21'-7 1/8"	24'-11 1/8"			5	20	4,4,4,4,4
21'-10 3/4"	25'-2 3/4"			6	20	3,3,4,4,3,3

* TWO LIGHT WIDE UNITS ARE FURNISHED IN THREE LIGHT HEIGHTS ONLY • •

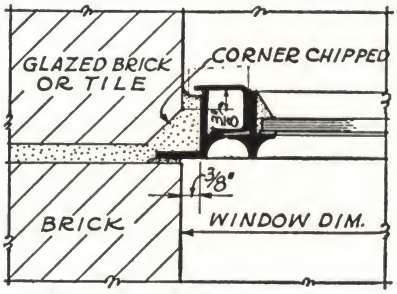




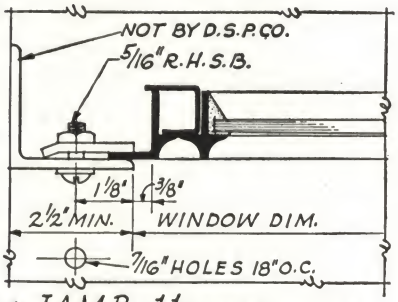
•HEAD-4-A• ANGLE SHOULD ALWAYS BE OFFSET AS SHOWN



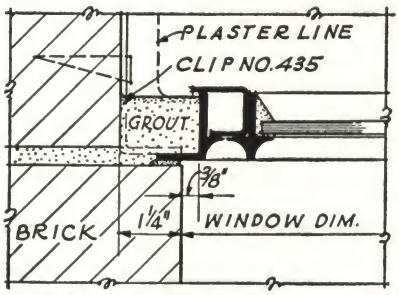
•HEAD-10• STEEL ANGLE. CLIP & BOLT FURNISHED BY D.S.P.CO.



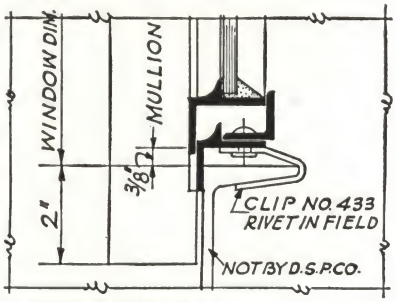
•JAMB-5• FOR MULTIPLE UNIT OPENINGS ONLY



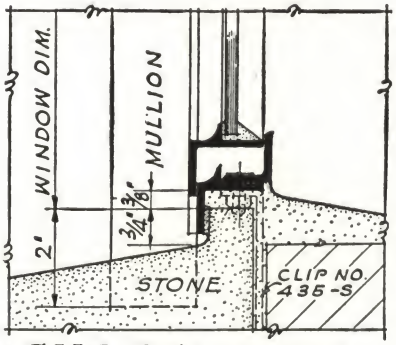
•JAMB-11• STEEL ANGLE CLIP & BOLT FURNISHED BY D.S.P.CO.



•JAMB-5-A• FOR SINGLE OR MULTIPLE UNIT OPENINGS.

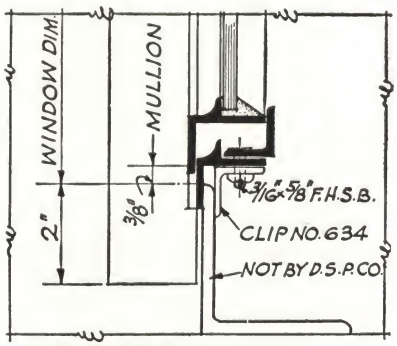


•SILL-12-A• STEEL CHANNEL CLIP & RIVET FURNISHED BY D.S.P.CO.



•SILL-6-A• CUT STONE.

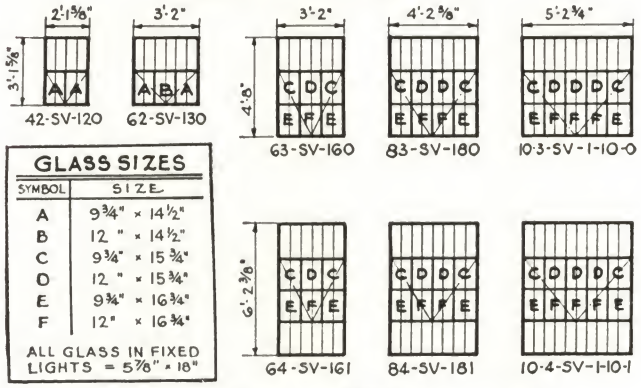
•BRICK•



•SILL-12-B• STEEL ANGLE. CLIP & BOLT FURNISHED BY D.S.P.CO.

•STEEL•

SECURITY WINDOWS

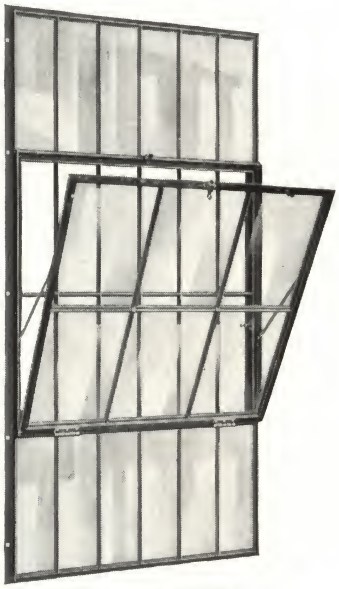


GLASS SIZES	
SYMBOL	SIZE
A	9¾" × 14½"
B	12 " × 14½"
C	9¾" × 15¾"
D	12 " × 15¾"
E	9¾" × 16¾"
F	12" × 16¾"

ALL GLASS IN FIXED LIGHTS = 5⅞" × 18"

Security Windows, made in eight sizes, consist of a main frame with bars spaced to provide 6"x18" openings. On the inside of the main frame is super-imposed a bottom hinged, open in ventilator with bars spaced to provide 12" x 17" openings. Ventilators are supported by steel side arms.

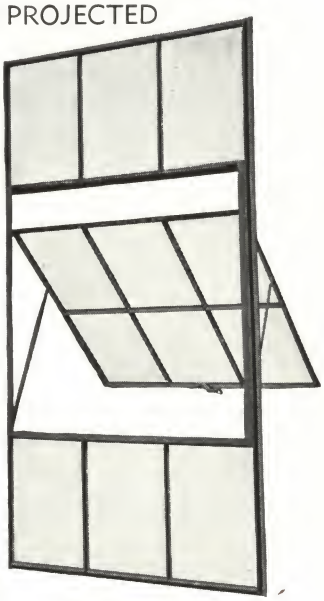
Openings in the main frame, above and below the ventilator, are to be glazed, but those immediately in front of the ventilator are left unglazed to act as a grille.



Security Window

Thus Security Windows combine a solid steel window and solid steel grille, all in one unit and erected in one piece. Both vertical and horizontal bars are equivalent in strength to ⅝" round bars.

COMMERCIAL PROJECTED



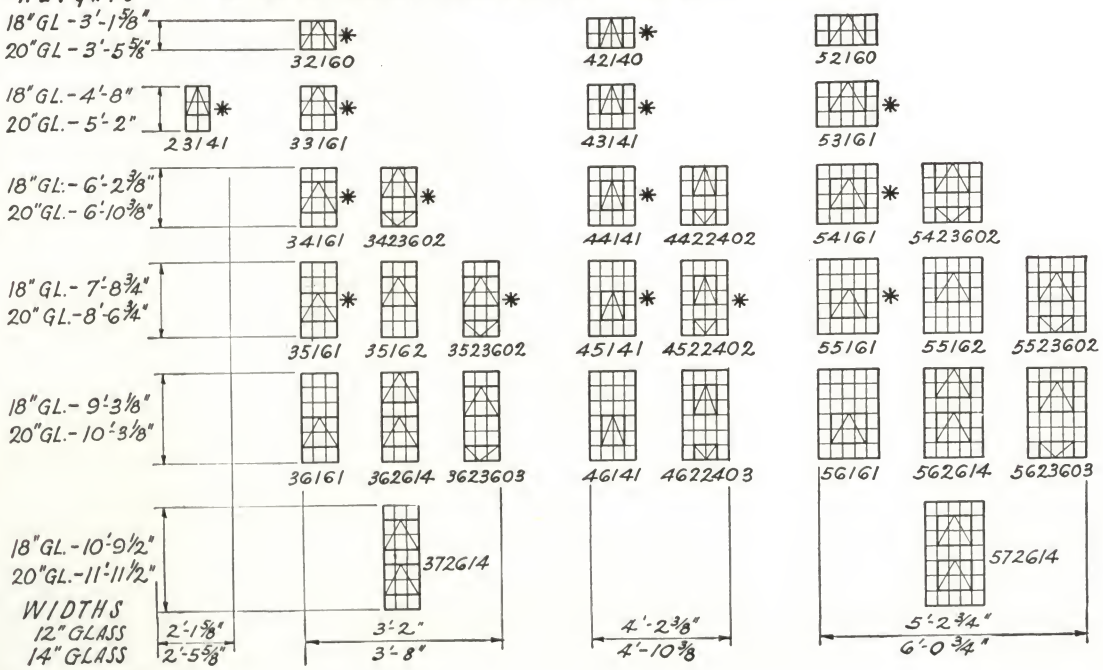
Commercial Projected

Commercial Projected Windows are similar to Horizontally Pivoted Windows except that the ventilators are balanced on spring steel side arms and are equipped with bronze friction shoes so that they open entirely inside or entirely outside the plane of the window. This arrangement permits easy shading and screening, and open-in vents one pane high are frequently used at the sill in place of wind guards.

Open-out vents are provided with spring stops limiting the vent travel to 60 degrees but, for washing purposes, these stops may be depressed and the vent opened still further so that all glass may be washed on the outside from the inside. Appropriate hardware is supplied in malleable iron (bronze at an extra). The windows may be supplied with Underwriters' label when equipped with continous glazing angles, but subject to some limitations in units and glass sizes.

STANDARD TYPES ~ COMMERCIAL PROJECTED

HEIGHTS · * TYPES SHOWN STARRED ARE CARRIED IN STOCK



FENESTRA CONTINUOUS WINDOWS

Fenestra Continuous Windows equipped with Fenestra Continuous Operator are particularly designed for use in monitor and sawtooth roof construction where the plane of the windows is on a slope. They may be used in vertical planes where necessary.

Standard units of Continuous Windows measure 20′ in length (dimensions points equal the clear opening). We recommend for economical arrangement of operator arms that units vary in multiples of 4′ (8′, 12′, 16′, etc.). Smaller units may be used if necessary, in widths varying in multiples of 2′ (that is, 8′, 10′, 12′, etc.).

All sections are specially designed, hot rolled, Vertex profile, solid steel bars. Head and end jamb members are special angles. Muntins are special T's 1⅜″ deep. Sills are especially designed sections with long downstanding legs bent at the end to make close contact with the building construction.

All members of the window are accurately fitted and rigidly riveted at the joints to form standard panel units. Panels are joined (when erected), end to end midway between T muntins, by splice plates bolted to head and sill members.

At the ends of all swing sections next to the building construction 1′ stationary panels are provided. Between the ends of swing sections 2′ stationary panels are provided.

The joint between swing sections and stationary sections is covered and protected by a specially formed, 14-gauge, steel channel with one leg secured to the end angle of the swing section and the other designed to overlap the end angle of the stationary section.

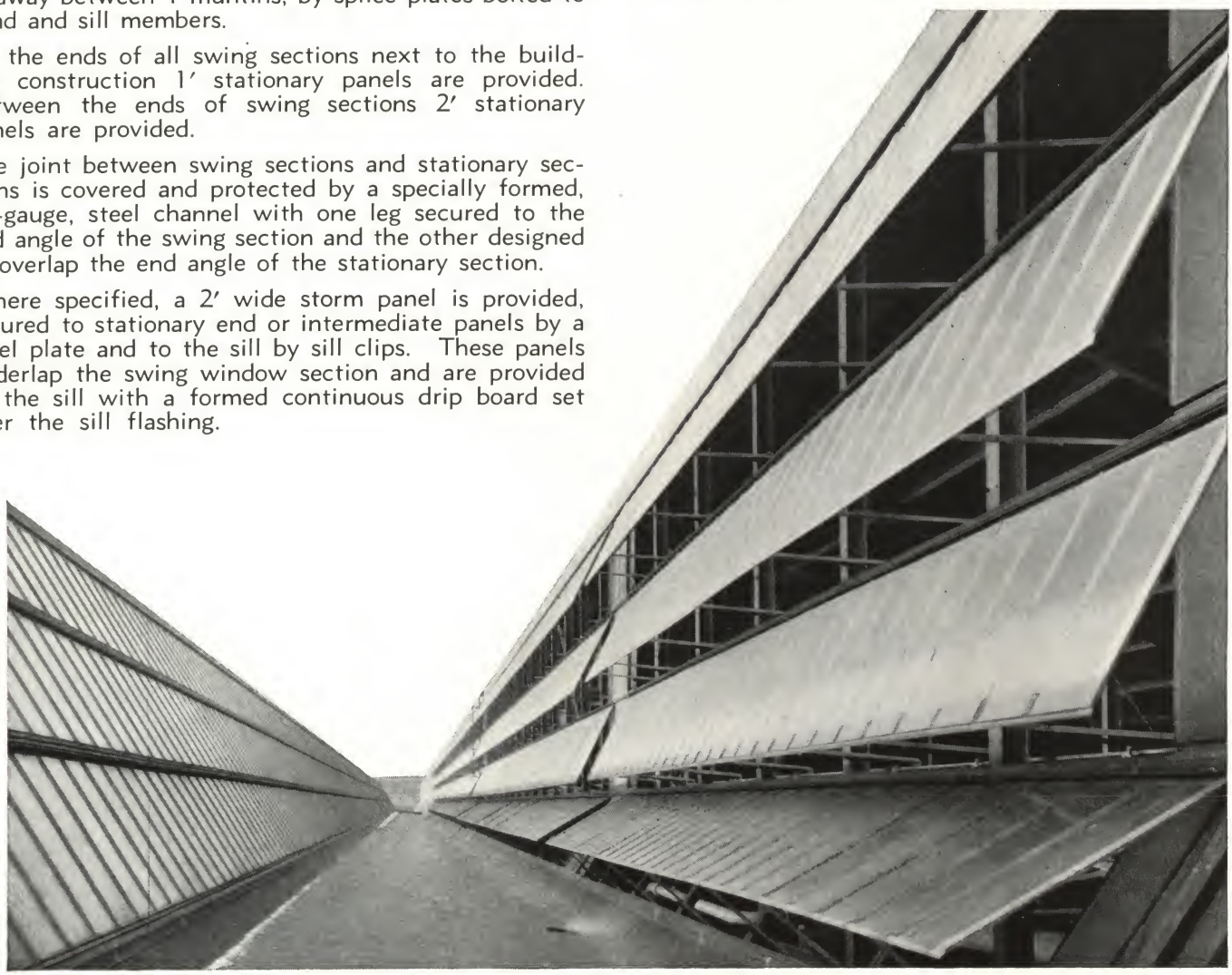
Where specified, a 2′ wide storm panel is provided, secured to stationary end or intermediate panels by a steel plate and to the sill by sill clips. These panels underlap the swing window section and are provided at the sill with a formed continuous drip board set over the sill flashing.

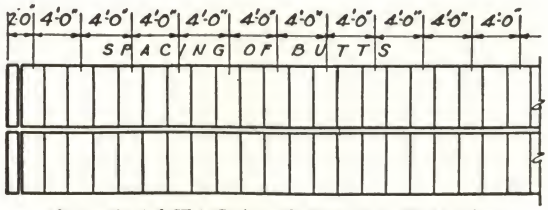
Continuous Windows are usually top hung on heavy malleable iron butts, with ⅜″ brass pins, spaced 4′ apart on centers. Butts are rigidly riveted to the head angle and furnished with bolts for attachment to the building girts.

All Continuous Windows are given one dip coat of red mineral paint before shipment. Additional coats of paint should be applied after erection but before glazing.

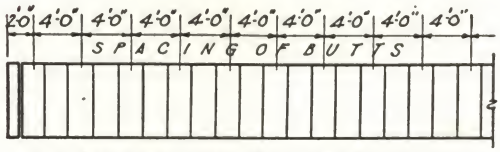
The windows are designed for glazing from the outside with ¼″ rough wire glass. All glass should be set in a heavy bed of steel window putty and secured at the muntins and end angles by angle clips secured with bolts. Face putty should be applied at sills.

Continuous Windows are also supplied without swing sections to be used as fixed windows, heavy steel angle clips being bolted to the window head and the building girts in place of the butts used on top hung Continuous Windows. Steel sill clips are furnished with fixed windows, shipped flat, to be bolted to the sill of the window and bent around the steel sill girt to rigidly secure the window in position at the bottom.





ELEVATION-DOUBLE RUN



ELEVATION-SINGLE RUN

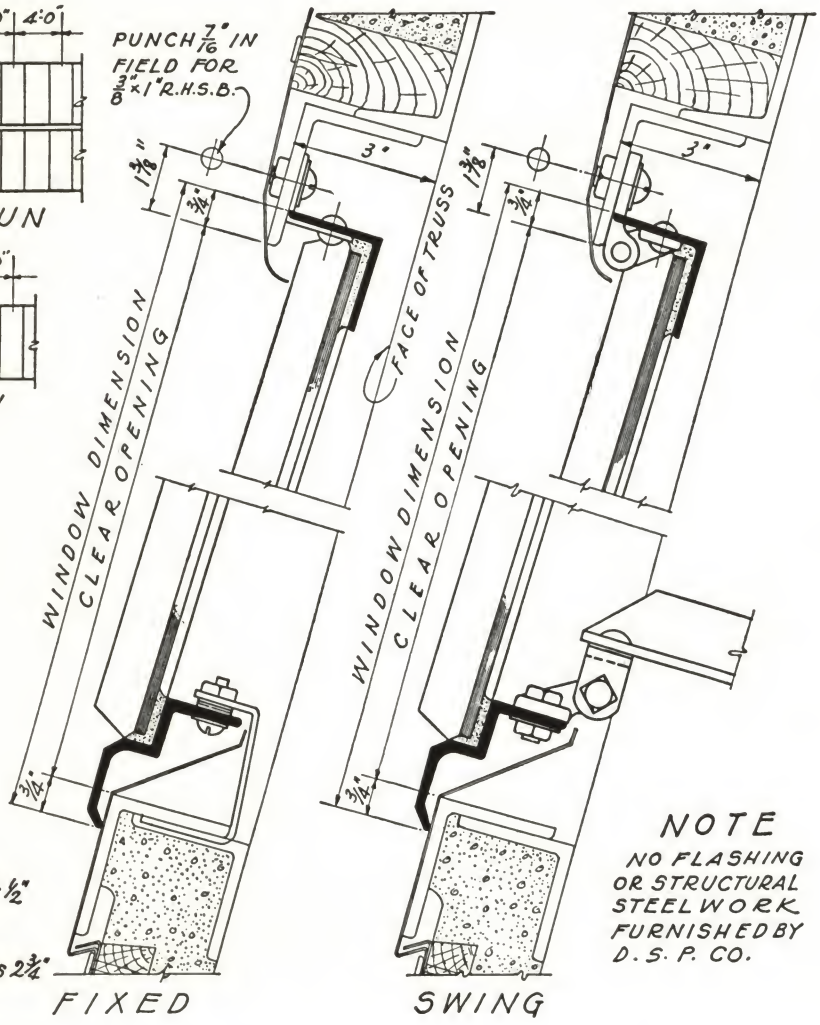
WINDOW HEIGHT	GLASS WIDTH	GLASS HEIGHT
3'-0"	23 1/2"	2'-9 1/4"
4'-0"	23 1/2"	3'-9 1/4"
5'-0"	23 1/2"	4'-9 1/4"
6'-0"	23 1/2"	5'-9 1/4"

TABLE OF WINDOW DIMENSIONS AND CLEAR OPENINGS.	
WINDOW-O.	CLEAR O.
3'-0"	2'-10 1/2"
4'-0"	3'-10 1/2"
5'-0"	4'-10 1/2"
6'-0"	5'-10 1/2"

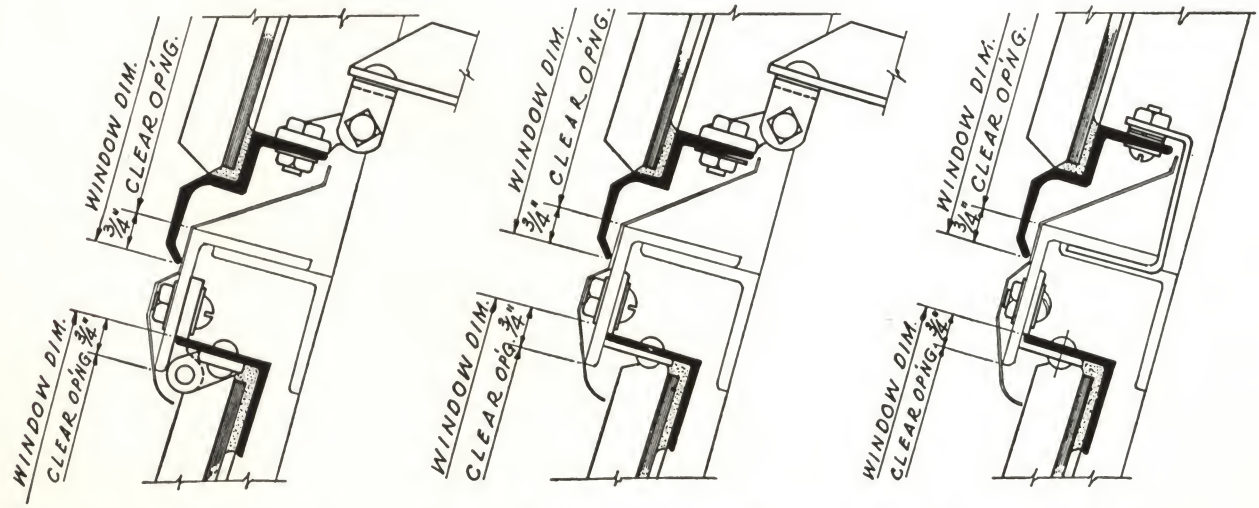
GLASS SIZES

WIDTH
EQUALS BAR CENTERS MINUS 1/2"

HEIGHT
EQUALS SASH DIMENSION MINUS 2 3/4"



NOTE
NO FLASHING OR STRUCTURAL STEEL WORK FURNISHED BY D.S.P. CO.



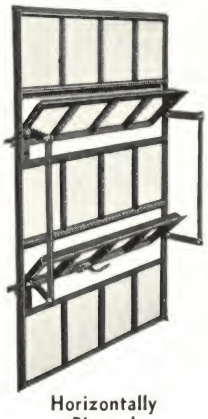
SWING OVER SWING SWING OVER FIXED FIXED OVER FIXED

SCALE: 3"=1'-0"

FENESTRA DETENTION WINDOWS

Super-Bar

Side Projected



Horizontally Pivoted

Spring Balance

The design of a detention window is determined mainly by the degree of restriction necessary, and the architectural appearance desired. Fenestra has developed many types, only a few of the more widely used designs being shown. Windows suitable for nearly all conditions are available, and Fenestra Engineers will gladly assist in making a choice, or in designing to meet unusual individual needs.

SUPER-BAR WINDOWS

This window offers maximum restriction, the fixed light or grille portion being constructed of extra heavy rolled steel bars 1¾" deep and weighing slightly over 2 lbs. per lineal foot. Open-in ventilators are attached to the inside face of the fixed unit, which is not glazed in lights adjacent to the ventilator. The heavy bars form a lattice grille over the ventilator opening.

The fixed unit is constructed for outside glazing with 6" x 9" glass. Frame corners, muntin and frame intersections, and muntin joints, are thoroughly welded, both inside and out.

Ventilators are attached to inside of the fixed unit by continuous welding along sill and at muntin points at head and jambs; and may be equipped for individual control by hand or pole, or operated in groups with a mechanical device. Screening is easily accomplished with an outside screen.

Super-Bar windows with muntins of special, tool resisting steel, at extra cost.

Windows of similar design may be obtained, constructed with 1½" or 1¼" deep bars in the fixed grille portion.

SPRING BALANCE WINDOWS

This window has the appearance of the conventional double hung unit, but the opening can be regulated by a jamb lock with special key.

Ventilators are hung on concealed tapes operating through spring balances, exactly adjusted to balance the weight of the glazed sash.

SIDE PROJECTED WINDOWS

This window has the appearance of the conventional casement, detention being secured by limiting all movable portions to a maximum opening of 5". In the open position, the outer rails of the side projected ventilators are almost in contact making any hinges or connections at this point unnecessary.

Two side projected leaves (a single leaf cannot be used) are operated simultaneously by a screw-type device concealed under the steel stool, and are locked individually by cams concealed at the center of the vertical meeting rail.

Unit widths are limited to 3' minimum and 4' 6" maximum; side projected leaves to a 5' maximum height.

If a projected-out transom is used, it is controlled by a worm and gear concealed in the vertical meeting rail, and is operated by a concealed stud located just above the locking cam. A single removable handle is used for all operating and locking arrangements.

The interior offers a particularly clean appearance, with no projecting hardware; and for this reason is very easily screened on the inside.

HORIZONTALLY PIVOTED WINDOWS

Window is of standard horizontally pivoted construction, with glass lights limited to approximately 6" x 9", and one-light high ventilators. It is frequently used in workshops located within the walls of the modern penitentiary. The number of ventilators may be regulated to suit conditions, and they are usually controlled in unison by double connecting bars, as illustrated.

FENESTRA OPERATING DEVICES

Fenestra Operating Devices are not sold as separate products, but only as methods of mechanically opening and closing Fenestra Windows. Erection should always be handled by the Fenestra Construction Company or an authorized Fenestra agent.

Due to the variety of conditions encountered, it is advisable that a Fenestra Engineer be consulted to insure a practical and economical layout. The types shown are standardized designs which are adequate to meet most conditions.

Fenestra Engineers will co-operate in designing mechanical devices to meet unusual individual needs.

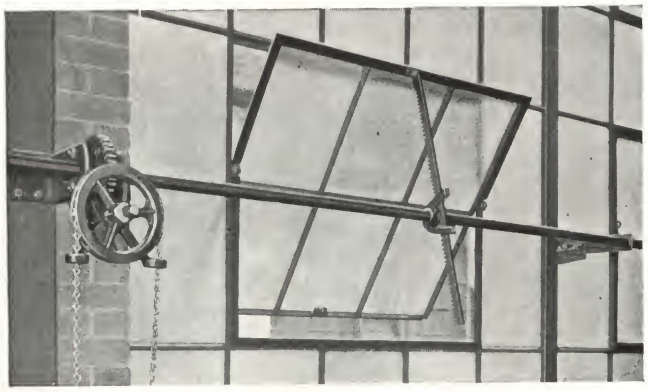
Worm and Gear Operator

FENESTRA WORM AND GEAR OPERATOR

Designed for manual operation, controlling horizontally pivoted or projected ventilators in single or multiple tiers.

The power consists of a machine-cut, cast-iron worm, equipped with ball thrust bearings, operating a cast-iron segmental worm gear assembled in a steel housing.

The power, for chain or mitre gear and pipe control, is located preferably in the center of the run, but may be located at the end.



Rack and Pinion Operator

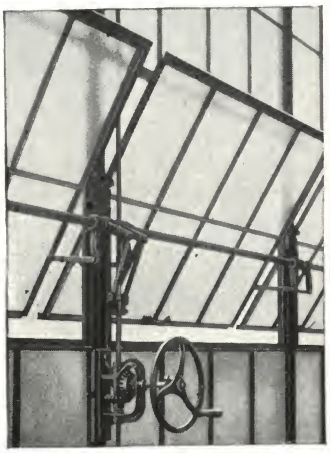
FENESTRA RACK AND PINION OPERATOR

Similar to worm and gear, except that the operator arms are straight racks engaging pinions on the transmission line. Considerably longer runs may be controlled from one power.

Operation may be by chain or mitre gear and vertical pipe, or an electrical hook-up may be used. Rack and pinion operator will handle short runs of Fenestra Continuous Windows.

FENESTRA SCREW TYPE OPERATOR

Designed for neat, inconspicuous appearance. The vertical pipe, horizontal transmission line and ventilator arms lie snugly against the inside face of window. The power may be manually or electrically controlled. This device is particularly suitable for high openings containing vertical tiers of ventilators.



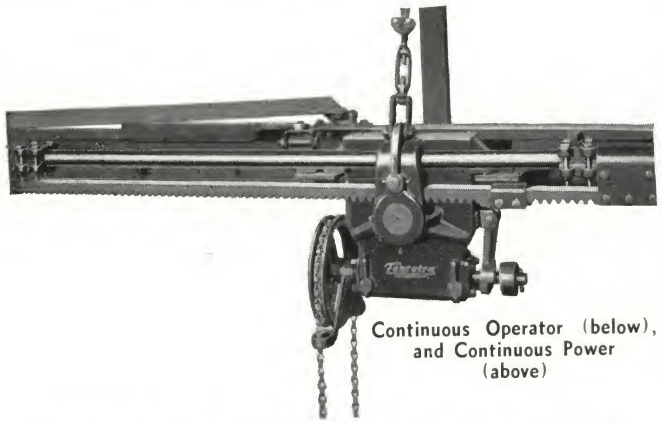
Screw Type Operator

FENESTRA CONTINUOUS OPERATOR

Designed to operate continuous windows, either manually or electrically in single or multiple banks.

Heavy construction and extreme care in assembly give this operator unusual strength and reliability.

The power may be located at either end of the run, not closer than 20′ to the end. Operator arms are spaced about 10′ on centers.



Continuous Operator (below), and Continuous Power (above)

FENESTRA STEEL DOORS

The range of Fenestra Steel Doors begins with general purpose "Fireshield" types in the non-labeled, metal-clad field and extends to counter-balanced hangar types with individual leaves 150′ wide by 32′ high, operated electrically. Swinging and sliding doors include: "Fireshield," "Industrial" and "Accordion" Types. Special purpose doors include: "Vertical Lift," "Bifold," "Canopy," "Byrne A" and "Pier" Types. Hangar Doors include "Byrne B" and "Horizontally Rolling" Types.

Detailed information, dimensions, clearances, etc. for any or all of these types will be supplied on request.

All doors are of steel, accurately assembled and designed for unusual weather-tightness and quick, easy operation.

Fenestra Engineers will gladly furnish specifications for high speed door equipment for special openings in all types of industrial and engineering structures.

FENESTRA "FIRESHIELD" DOORS

Single and double tubular steel doors complete with hinges, locks and frames. Designed for stairway entrances, service departments, operating rooms, theater dressing rooms, consultation rooms, store rooms, janitors' closets, toilets and any other locations where a non-labeled, metal-clad door can be used and where purely ornamental finish is secondary.

Strong, rigid, attractively designed, non-inflammable, free from warping, sticking, swelling and concealed deterioration.

Single Widths	Double Widths	Heights
2′ 6″	5′ 0″	6′ 6″
2′ 9″	5′ 6″	6′ 9″
3′ 0″	6′ 0″	7′ 0″

Any of these widths may be combined with any height shown.

A choice of five types of locks and three types of hinges. No templates necessary. No need to purchase hardware locally. U. S. Govt. No. 9 solid bronze finish is standard. Seven other U. S. Govt. finishes are available.

Type 1

Type 2

Type 3

Type 4

Steel frames are 16-gauge steel, shipped knocked down in standard sizes or assembled and welded. Frame depths fit 4″, 6″ or 8″ plastered walls.

FENESTRA INDUSTRIAL DOORS

These doors meet the demand for neat, clean appearance for either entrance or partition openings.

Rails and stiles of pressed tubular sections mitered at corners and solidly welded over heavy steel reinforcements. Lower panels filled with steel plates. Upper panels have sash muntins neatly welded into stiles and rails. Doors can be fitted with master-keyed cylinder locks, panic bolts and door checks. Special sizes if required. Stock sizes include:

Fenestra Swing Door

Fenestra Double Sliding Doors

Single Doors				Double Doors			
Swing Opening		Slide Opening		Swing Opening		Slide Opening	
Width	Height	Width	Height	Width	Height	Width	Height
2′ 6″	7′ 0″	2′ 3″	6′ 10½″	5′ 0″	7′ 0″	4′ 9″	6′ 10½″
3′ 0″	7′ 0″	2′ 9″	6′ 10½″	6′ 0″	7′ 0″	5′ 9″	6′ 10½″
3′ 6″	7′ 6″	3′ 3″	7′ 4½″	7′ 0″	7′ 6″	6′ 9″	7′ 4½″
4′ 0″	8′ 0″	3′ 9″	7′ 10½″	8′ 0″	8′ 0″	7′ 9″	7′ 10½″
5′ 0″	10′ 0″	4′ 9″	9′ 10½″	10′ 0″	10′ 0″	9′ 9″	9′ 10½″

FENESTRA "ACCORDION" DOORS

Primarily applicable to public garages, bus terminals, street-car and railway repair shops. They are designed to fill wide, high openings with ample clearances for cars or trucks. May be arranged to open either in or out. Manually operated or electrically connected to remote control stations. These doors are built for heavy and constant usage.

Fenestra "Accordion" Door

FENESTRA OVERHEAD DOORS

Where economy of floor space is a factor or where swinging or sliding doors are undesirable, Fenestra offers five types of overhead doors as listed below. Counterweights and clearances (at head or jambs or both) are important. Special information on these points is available on request.

"**CANOPY**" Doors are of balanced construction. Each

Fenestra Canopy Door

Fenestra-Byrne Type A Door

Fenestra Vertical Lift Door

Fenestra Bi-fold Door

Fenestra Pier Door

door consists of a single leaf, swinging out at the bottom and in at the top, hand or electrically operated and moving with unusual speed and ease from a closed, vertical position to an open horizontal position at the head of the opening, half inside and half outside the building.

"**BYRNE A**" Doors are also of the single leaf type. In opening, the counter-balanced leaf rises vertically 4" (clearing snow and ice) then tilts and rises to a horizontal position at the head of the opening, half inside and half outside the building. Hand or electric power. Adaptable to conventional types of buildings.

"**VERTICAL LIFT**" Doors are designed with two counter-balanced leaves, one above the other. In opening, the lower leaf slides up inside the upper and both leaves slide up to a vertical position above the door opening and entirely inside the building. Head clearance equal to half the opening height plus 1′ 8″ is required. Hand or electric operation.

"**BIFOLD**" Doors are made with two leaves hinged at the horizontal centerline of the opening. The lower leaf folds up against the outside of the upper leaf and both leaves fold to a position above the opening and inside the building. Electric operator cannot be used.

"**PIER**" Doors have two horizontal, counter-balanced leaves. In opening, the lower leaf slides up inside the upper leaf and both leaves then slide back on horizontal tracks until they lie in a horizontal position above the opening and entirely inside the building. Hand or electric operation.

FENESTRA "BYRNE B" DOORS

Fenestra "Byrne B" Doors are designed with one single leaf up to 150′ wide by 32′ high. Due to its inherent balance and quick, easy operation, this door is especially desirable for large openings where conventional door equipment fails because of its own dead weight or the impracticability of installation.

In opening, the door lifts vertically 8" (clearing snow and ice) then tilts as it rises until when fully open it is practically horizontal above the opening, half inside and half outside the building. Power operators are equipped with auxilliary hand operators and the change from power to hand operation or vice versa is instantaneous.

World's Largest Single Leaf Door, Fenestra-Byrne B, Municipal Airport, Denver, Colo.

FENESTRA ROLLING DOORS

These doors are of heavy construction, designed to roll on steel floor tracks, directed by steel guides at the head. They are supplied either in the "straight slide" or "round-the-corner" type. Each leaf contains steel window units in its upper panel and steel plate below. Economical but built for severe usage.

Fittings are malleable castings. Bottom rollers mounted on roller bearings.

Round-the-corner Door

Top: Kingswood School for Girls, Cranbroo
Bloomfield Hills, Mich.
Eliel Saarenen, Architect.

Left: Architects' Building, Philadelphia, Pa.
Designed by Committee of Architects.

Center Right: Columbia University Medical Schoo
New York City.
James Gamble Rogers, Architect.

Bottom: Mercer Co. Court House, Princeton, W. Va
Alex B. Mahood, Architect.

FEDERAL STEEL SASH COMPANY

INCORPORATED

GENERAL OFFICES AND WORKS
WAUKESHA, WIS.

Products

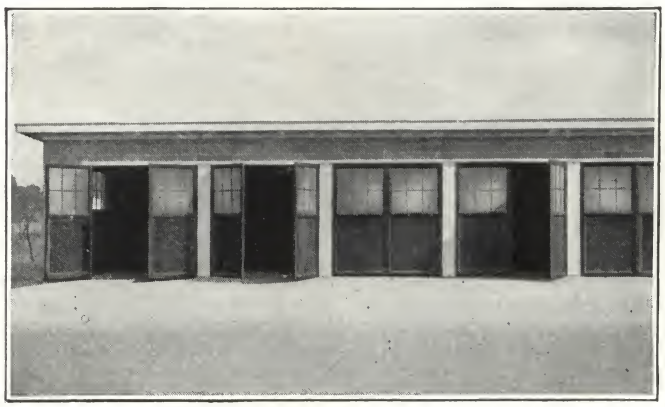
STEEL WINDOWS: Pivoted, Projecting and Continuous.
STEEL DOORS: Industrial, Airplane Hangar and Warehouse. For complete details and specifications write for our catalogue.

Pivoted Windows

Projected Windows Commercial with Semicircular Heads

Projected Windows Architectural

Continuous Windows and Operating Devices



Industrial Doors

Airplane Hangar and Warehouse Doors

OUTSTANDING FEDERAL FEATURES

Electric Arc Welded Construction

When steel windows were first introduced, the designers were faced with the problem of making a joint between the various members, similar to the joints in wood sash, which could be economically produced with the facilities then available. Some form of interlocked, mitered, dovetailed or tongue and slot joint was used, in which it was necessary to cut away a portion of the section of each of the members to be joined. As a result, the actual or effective depth of the mechanically jointed section was less at the joint by the amount of the cutout than the overall depth, and as the strength at the weakest point had to be sufficient to withstand the stresses to which the window would be subjected, the members as designed were of necessity heavier between the joints than was required, with the result that extra weight was added to the member without adding anything to the strength or stiffness of the window. This is the old proposition of the chain and its weak link. *Just as no chain is stronger than its weakest link, no window member is stronger than its weakest point.*

The Weld Produces a Joint as Strong as the Section
Note failure of the section, the weld being intact

In addition to the disadvantage of having to increase the weight of the members without any compensating increase in strength or stiffness, there was a further pronounced disadvantage inherent in interlocked, mitered, dovetailed or tongue and slot joints, namely, that after the window was assembled it would rack out of shape in handling, shipping and erecting. This instability of construction arose from the fact that the only way in which these joints could be held in place was by hammering or pressing the members together.

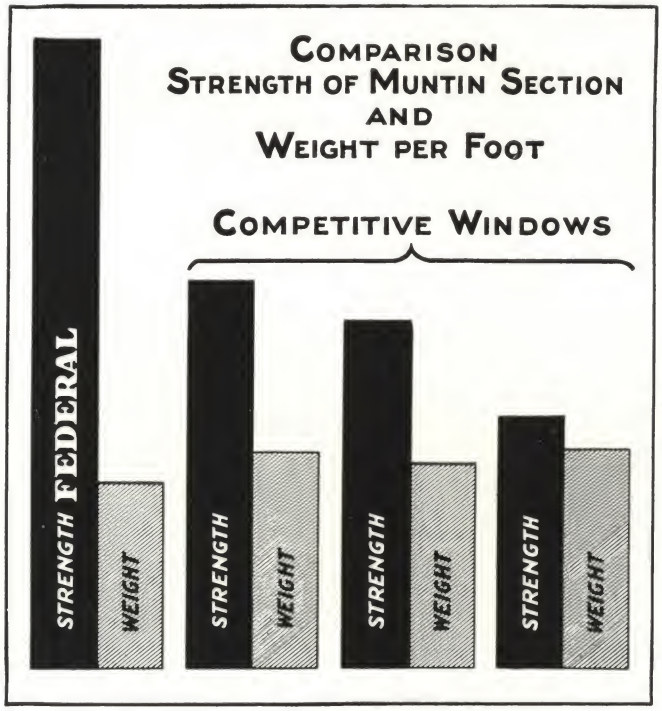
The inability to make a rigid mechanical joint not only increases the difficulty and cost of erection, but what is more important—makes difficult a properly weathered and easily operating ventilator.

It was not until the development of *electric arc welding* as a manufacturing process that a method of making connections was available which would eliminate the excess weight and the instability inherent in mechanically formed joints. The use of the electric arc is today so general in industry and construction as to require no argument to prove its practicability.

Federal engineers, in designing Federal Electric Arc Welded Products, were enabled to take advantage of this most modern method of joining materials and to design *a window with sections and joints in which the gross section of the member is utilized to the full for strength and stiffness, in which all excess weight is eliminated and in which every joint and connection is absolutely rigid and stable,* a window which it is not possible to rack or distort in handling, shipping and erection.

There is in the minds of some the impression that because something is heavy it must be inherently strong. This impression is, of course, to anyone acquainted with engineering principles, absurd, as it is well recognized that *mere weight does not in itself mean strength,* but that it is the proper distribution of the metal in the section and the proper design of the section itself for the purpose for which it is intended that are the essential factors. It is evident that any metal used in excess of that required to produce the given result can add no useful strength and is to all intents and purposes merely excess weight.

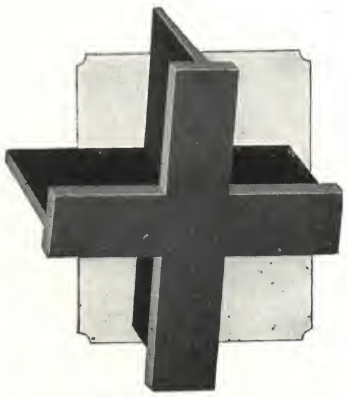
In order to visualize the relation between the weight per foot and the strength of the muntin section used in horizontally pivoted windows as determined by the condition at the joint after fabrication, the chart shown herewith has been prepared. *It will be evident from an examination of this chart that the Federal Muntin section, while the lightest section in weight per foot, is also the strongest.* A study of this chart together with an examination of the types of construction used on competitive windows will demonstrate that Federal engineers have been able to utilize material to its full value, and why the claim of superiority of design and construction for Federal products over the design and construction of any competitive window is well founded.



Materials

All sections are open hearth solid steel, hot rolled or cold drawn, of special Federal design.

Distorted Joint, Showing the Remarkable Strength of the Weld



The Muntin Joint
Note the Smooth Exterior Surface

★ LIGHT SEALAIR WEIGHT-HUNG WINDOWS

In Aluminum or Bronze

The Light Sealair Window is a compact, double hung window, sturdily built of solid aluminum or bronze, designed and priced for use in the average home. Brings new permanence and upkeep economy. For new or modernized homes. Special Kawneer screens and storm sash are available.

● **A COMPLETE UNIT**—Assembled at the factory, ready for quick installation in new or old homes. Upper and lower sash are glazed and installed in the frame on integral weather-strip guides; hardware is attached; pulleys and weights included.

● **SIMPLE CONSTRUCTION**—Sash are counterbalanced by the use of pulleys, sash cord, and weights with amazing compactness and precision. Weights and pulleys are easily accessible and sash easily removed for local glazing in case of glass breakage.

● **EASY INSTALLATION**—The complete Light Sealair Window can be installed by one man in an hour's time.

● **EASY OPERATION**—Properly installed, it offers easy, dependable operation at all times. Made of rustless metals. Unaffected by atmospheric conditions.

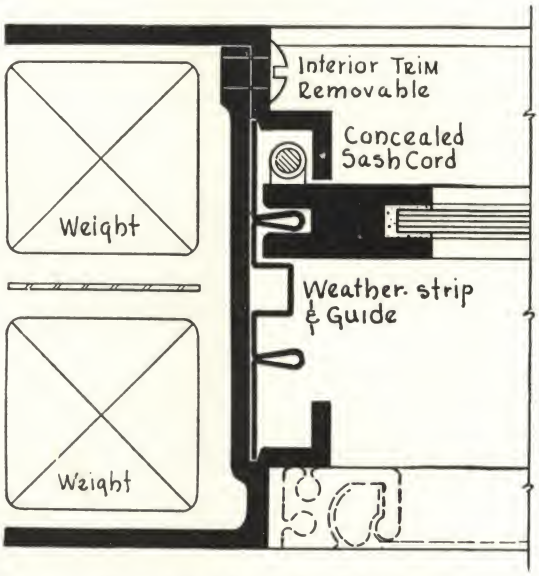
● **MINIMUM MAINTENANCE COST**—Requires no painting, no refinishing—will not swell, shrink, rust, flake off, stick, decay, or rot out.

● **WEATHERTIGHT CONSTRUCTION**—Accurate manufacture and interlocking members make Light Sealair dustproof, weatherproof, and rattleproof.

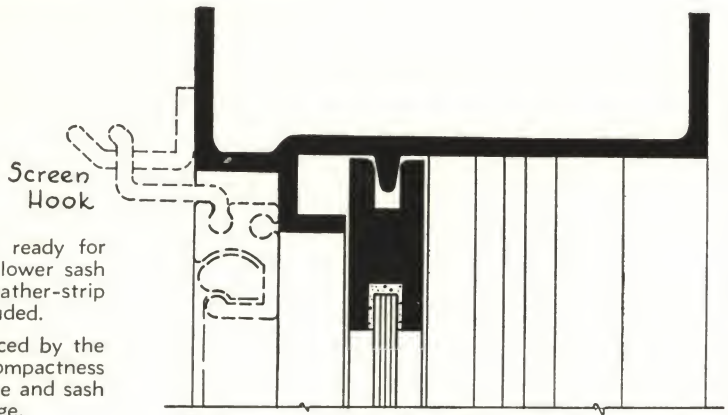
● **MODERN BEAUTY**—Extreme simplicity, appealing color, and unusual compactness make this new window unusually attractive. Lights may be divided as desired.

● **ADMITS MORE DAYLIGHT**—Light Sealair compactness admits about 15% more daylight. Mullions are reduced from the usual 10-in. to only $4\frac{13}{16}$-in.

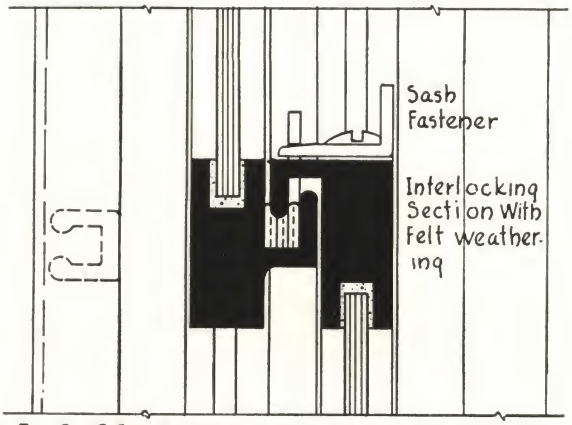
● **DURABLE**—Great strength is obtained without bulk—these windows are sturdily built to withstand all the use and abuse of hard everyday use.



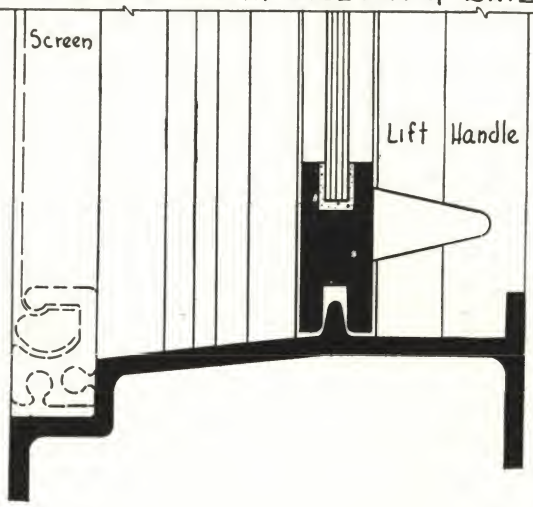
F. S. PLAN AT JAMB



F. S. SECTION AT HEAD JAMB



F. S. SECTION AT MEETING RAIL



F. S. SECTION AT SILL

SIMPLY DESIGNED FOR STRIKING BEAUTY, EASY ACTION AND LASTING SERVICE AND ECONOMY

Kawneer

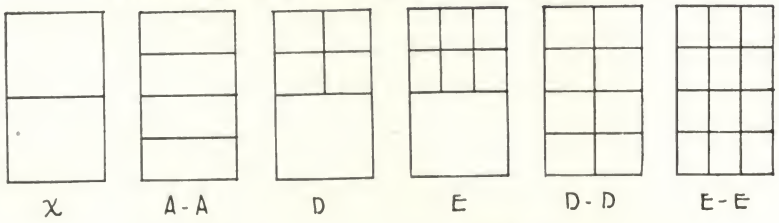
LIGHT SEALAIR WEIGHT-HUNG WINDOWS

Typical Frame Sizes

Light Sealair Windows are made in even glass sizes within the limits of these sizes

Glass sizes, in.	Single Window Frame sizes, in.	Twin Window Frame sizes, in.	Triple Window Frame sizes, in.
18x16—2 Lt.	22x35 1/2	44 7/16x35 1/2	66 7/8x35 1/2
18x20—2 Lt.	22x43 1/2	44 7/16x43 1/2	66 7/8x43 1/2
20x16—2 Lt.	24x35 1/2	48 7/16x35 1/2	72 7/8x35 1/2
20x20—2 Lt.	24x43 1/2	48 7/16x43 1/2	72 7/8x43 1/2
22x16—2 Lt.	26x35 1/2	52 7/16x35 1/2	78 7/8x35 1/2
24x16—2 Lt.	28x35 1/2	56 7/16x35 1/2	84 7/8x35 1/2
24x24—2 Lt.	28x51 1/2	56 7/16x51 1/2	84 7/8x51 1/2
26x16—2 Lt.	30x35 1/2	60 7/16x35 1/2	90 7/8x35 1/2
26x26—2 Lt.	30x55 1/2	60 7/16x55 1/2	90 7/8x55 1/2
28x16—2 Lt.	32x35 1/2	64 7/16x35 1/2	96 7/8x35 1/2
28x26—2 Lt.	32x55 1/2	64 7/16x55 1/2	96 7/8x55 1/2
28x28—2 Lt.	32x59 1/2	64 7/16x59 1/2	96 7/8x59 1/2
30x16—2 Lt.	34x35 1/2	68 7/16x35 1/2	102 7/8x35 1/2
30x24—2 Lt.	34x51 1/2	68 7/16x51 1/2	102 7/8x51 1/2
30x30—2 Lt.	34x63 1/2	68 7/16x63 1/2	102 7/8x63 1/2

Standard Types of Muntin Arrangement



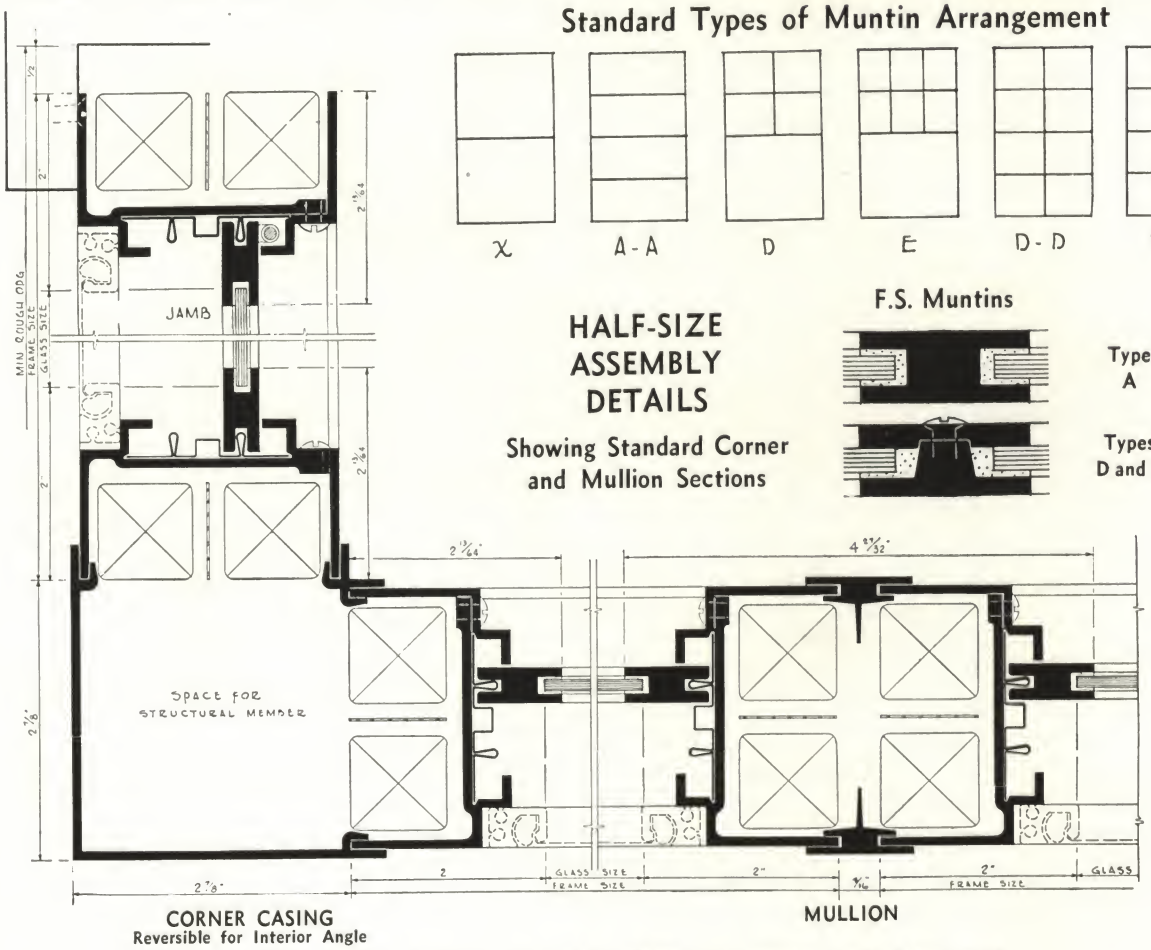
HALF-SIZE ASSEMBLY DETAILS

Showing Standard Corner and Mullion Sections

F.S. Muntins

Type A

Types D and E



CORNER CASING
Reversible for Interior Angle

MULLION

FULL SIZE LIGHT SEALAIR DETAILS SENT ON REQUEST

Specifications

● **DOUBLE HUNG WINDOWS**—Residential Double Hung Windows shall be Light Sealair Weight-Hung Windows as manufactured by The Kawneer Company, Niles, Michigan.

● **MATERIALS**—All extruded shapes of aluminum or bronze shall be formed by a reliable manufacturer of extruded metals. The metal used shall be of the best standard commercial alloy for the purpose intended. The weather-stripping members of the side jambs shall be specially formed stainless steel.

● **CONSTRUCTION**—The sections forming the window frames and sash shall be accurately coped and joined at corners and abutting intersections. All sash are to be readily removable by removing inside moulding trim on each of the side jamb sections. Pulleys, weights, and sash cords shall be accessible for adjustment without removing the window from the opening. Sash cords shall be concealed by the special formed section of the side jamb.

● **WEATHERING**—Sash rails at sill, jambs and head shall be designed to form an interlocking contact against the frame members. Weathering at meeting rails shall be metal to felt. Felt shall be all wool, specially prepared to give a maximum resiliency and treated to prevent deterioration due to vermin, moisture or exposure.

● **GLAZING**—Windows shall be glazed by the manufacturer with either "A" quality window glass or ⅛-in. plate glass.

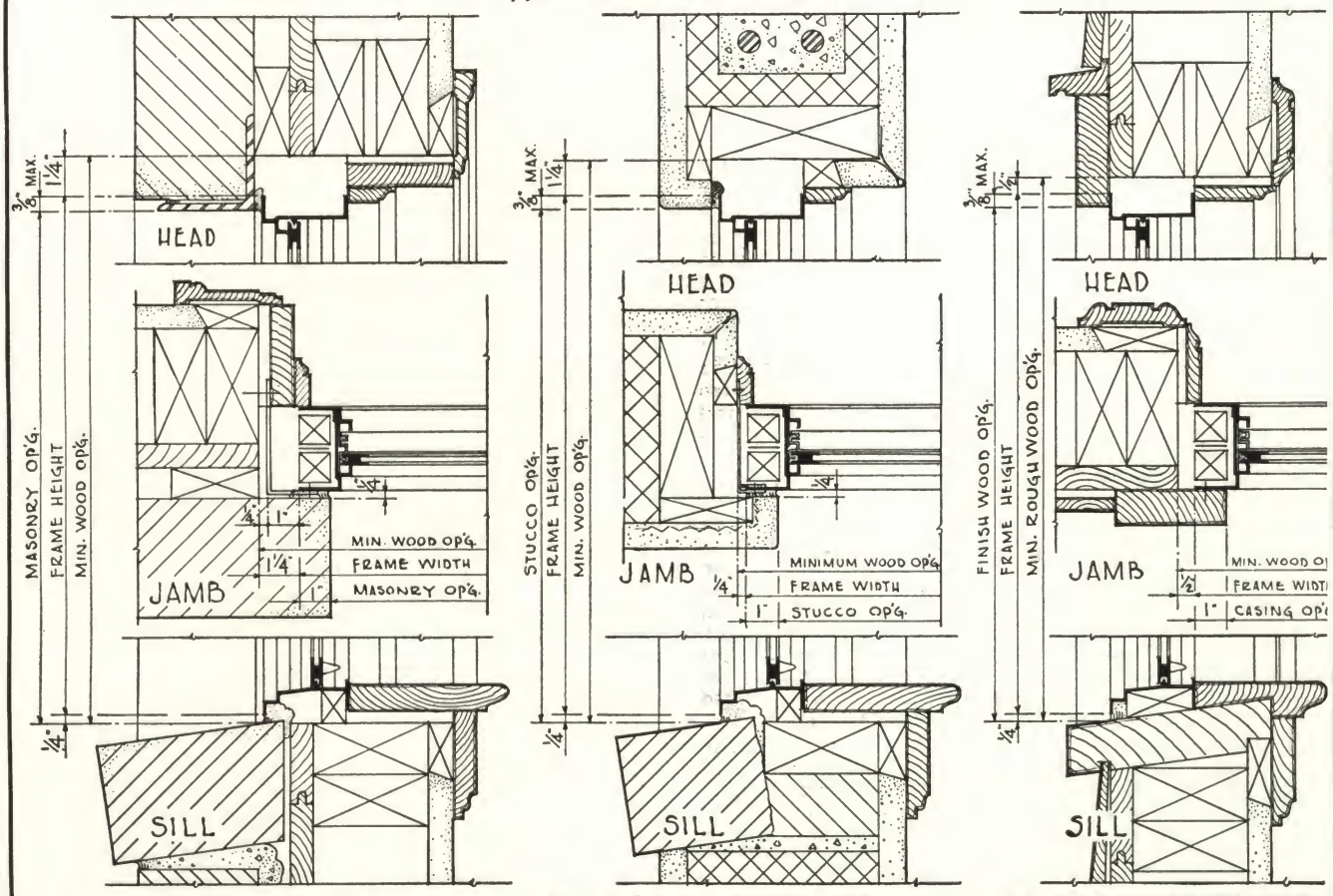
● **HARDWARE**—Hardware shall be finished to match window and shall consist of appropriate lifts and meeting rail lock.

● **FINISH**—All frames and sash shall have a fine satin finish unless otherwise specified.

● **INSTALLATION**—The windows shall be installed in the proper opening immediately after plastering. Before leaving factory, windows shall be coated with a protective coating as a precaution against damage to finish in transit and during erection. After installation, this protective coating shall be removed with any standard solvent.

SIMPLE INSTALLATION EFFICIENT OPERATION

Typical Installation Details



BRICK VENEER CONSTRUCTION
Installation shown with angle clip

TILE & STUCCO CONSTRUCTION
Installation shown with continuous angle

FRAME & SIDING CONSTRUCTION
Installation against a wood casing

Kawneer

★ HEAVY SEALAIR WEIGHT-HUNG WINDOWS

In Aluminum or Bronze

Kawneer Sealair Double Hung Windows are particularly adapted for use on buildings where minimum upkeep and maintenance are essential features.

Sealair windows are made of non-ferrous metals, either bronze or aluminum. Both of these metals will last indefinitely and assure the owners of minimum upkeep for the life of the building. Kawneer Sealair Windows are sturdily constructed to withstand strains to which they will be subjected in daily use and to withstand the elements. Patented double guide type stainless steel weather-strips at jambs assure protection from the weather and also serve a second purpose in that they facilitate the ease of operation without binding, sticking or rattling.

Sealair windows allow only a minimum of air infiltration as tests have shown. Engineer's report shows that our double hung Sealair construction allows the entrance of only .726 cubic feet per minute per foot of perimeter which is almost negligible.

The hardware on Sealair windows is of extremely sturdy design and of ample strength for the duties required.

★ **MEDIUM SEALAIR WEIGHT-HUNG WINDOWS.** Another fine commercial window similar to Light Sealair, but 30% heavier. For openings up to 4 ft. in width. Write for details and specifications.

Specifications

● **DOUBLE HUNG WINDOWS** shall be Kawneer Heavy Sealair Weight-Hung Windows as made by The Kawneer Co., Niles, Michigan.

● **MATERIALS**—The bronze and aluminum metal used shall be of standard commercial alloys and the best that can be obtained for the purpose intended. All members shall be solid extruded one-piece sections with all faces, sections and arrises true and in perfect alignment with each other. Concealed members shall be steel or iron plate and zinc coated. Cover plates of 20-gauge metal shall be attached to the backs of jambs and heads. Parting strips between weights shall be 24-gauge metal. The Contractor shall submit with his estimate a drawing showing the minimum size of members for each opening.

● **CONSTRUCTION**—The sections forming the window frames shall be accurately coped or mitered at corners and at abutting intersections; then the joints shall be either welded solid along the entire line of contact, or they shall be milled to a hair line joint, tenoned and riveted and then welded on the unexposed side. Frames shall have outside staff beads and shall give ready access to the weights, pulleys and chains for repairs or replacements. Frames with weightless mullions shall have concealed overhead pulleys and chains. Sash members shall be coped or mitered and welded at corners. Surplus metal at welds shall be dressed flush and smooth on all exposed and contact surfaces.

● **WEATHERING**—Sash rails at sill, jambs and head shall be designed to form a double contact against frame members. Contact members on jambs shall be formed of stainless steel weather-stripping. Contacts at sill and head shall be formed with ribs extruded as an integral part of the sill and head members. The meeting rails of sliding sash shall interlock and form a double contact when closed, with top members forming a continuous pull.

● **GLAZING**—Glazing is not included under this heading but is called for under the heading "Glass and Glazing." Glazing Contractors shall back putty all glass and block same if necessary. All sash shall be designed to allow glazing from the inside of the building. Glass shall be secured in place with glazing mouldings of the same material as the window, mitered at the corners and fastened with machine screws of the same material.

● **HARDWARE**—Sliding sash shall be counter-balanced with metal weights. Pulley housings and wheels shall be malleable gray cast iron with stainless steel axle and thrust washers. Pulleys and housings shall be removable as a unit. Sliding sash shall be hung on zinc coated steel sash chains having a tensile strength of at least 425 lbs. Chain attachments shall develop the full strength of the chains. Two lifts shall be provided on the bottom rail of the lower sash and a cam action fastener at the center of the meeting rails. A pole ring shall be provided on the top rail of upper sash for pole operation.

● **FINISH**—All frames and sash shall have a fine satin finish unless otherwise specified.

● **INSTALLATION**—All windows shall be installed by the manufacturer or under his supervision after the walls are built. Steel anchors shall be provided at heads and jambs of frames anchored to masonry with machine bolts and expansion sleeves or toggle bolts. Steel anchors shall be painted or cadmium plated. Before leaving the factory the windows shall be coated with a protective coating as a precaution against damage to finish in transit and during erection. After installation this protective coating shall be removed and all metal work cleaned as directed. Grouting and caulking are specified under another heading.

Federal Manufacturing Methods

The raw material is cut to length and the ends formed for the welded connection in one operation. Where members are built up of two or more sections they are *electric spot welded* together while firmly held in jigs to assure accurate dimensions of the built-up members. Preparatory to electric arc welding the joints, the individual members are assembled on welding tables. These tables consist of rigid heavy structural steel frames with accurately machined surfaces. On these frames are bolted the welding pads with their clamps and guides. The individual members are clamped in the guides with their exterior faces against the welding pads and while thus firmly held in position each connection is *electric arc welded.* This method insures absolute squareness and accuracy of dimension and a product which is to all intent and purpose one solid piece. The design of the welding tables, and the method of assembling and welding on the tables, are protected by United States patents Nos. 1648409 and 1648416.

A comparison of methods used in manufacturing Federal Windows with those used in the manufacture of competitive windows will show several points of superiority in the Federal method. *There are no cutouts or notches in any Federal members* to permit of the joining together of two members at the joint, and *there is no distortion, spreading or stretching of the material in Federal construction,* as is the case in a number of other makes of windows. The use of the electric arc for forming connections fills up all spaces between members and leaves *a smooth, unbroken surface at the Federal connection* as compared to the overlapped surface or butted edges common to connections in competitive windows.

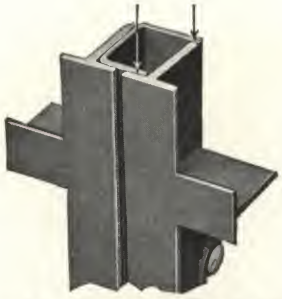
After welding, the products are removed from the welding table and the face of each weld is ground to a smooth surface. All excess material and roughness at the welds on the interior is removed by chipping with an air hammer. This operation not only cleans each weld, but subjects each individual weld to a severe shock test, so that in this operation *every weld made on Federal products is individually tested for strength.*

Ventilators are then fitted and hardware attached, after which the product is again inspected, is painted and is then ready for shipment.

Double Contact Weathering of Window Ventilators

Federal window ventilators are constructed to provide *continuous double contact weathering* around all four sides of the ventilators. All ventilators are accurately fitted at the shop, and since Federal windows are rigid and cannot be distorted in handling, shipment or erection, the window when erected will be in a satisfactory weathering condition. The shop fitting of Federal horizontally pivoted ventilators, combined with the Federal close pivot construction and the lever action of Federal draw-tight ventilator operators, produces a pivoted window which is both rain and wind tight.

Tests which have been made by reputable engineers in a careful and scientific manner to determine the leakage through ventilators on horizontally pivoted steel windows, demonstrate the superiority of Federal construction over that used in competitive windows. Comparing the results of tests on five other windows to the result on Federal, the nearest competitive window had a leakage of 39.5% in excess of Federal, while the maximum leakage was 143.0% of Federal, and the average for the five windows was 105.8% in excess of Federal, or over twice the leakage through the Federal ventilator.



Double Contact Weathering All Four Sides of the Ventilators

No Corrosion of Joints

There are no overlapped surfaces or butt contacts on Federal steel windows, and consequently there are no points at which moisture can enter and set up corrosion. The flush exterior surface of Federal windows, free from all projections and ledges, avoids the collection of dirt and moisture. *There are no open joints.* All surfaces are accessible for painting.

Rust Prevention

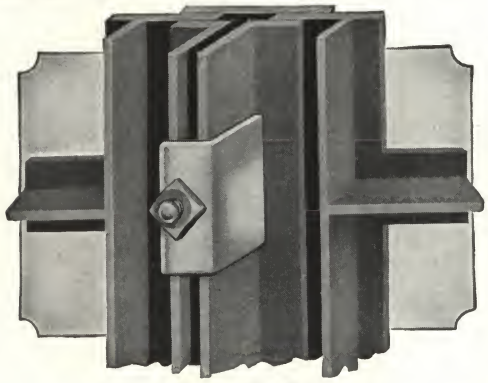
As Federal windows are absolutely rigid and there are no open, overlapped or butt joints, and all surfaces are smooth and accessible, it is possible to *hot dip galvanize* Federal windows or to *plate with any protective metal covering* with the assurance that the protective covering will not be injured due to movement between the window members while being handled, shipped or erected.

Federal Close Pivot

The Federal pivot for horizontally pivoted windows projects but ⅝ in. from the window frame. *It consists of two substantial pressed steel leaves joined with a sturdy bronze pin.* The use of a bronze pin prevents rusting and insures at all times a free acting ventilator. The very small projection of this pivot materially lessens the chance of injury during shipment, handling and erecting.

Federal Draw-Tight Push Bars

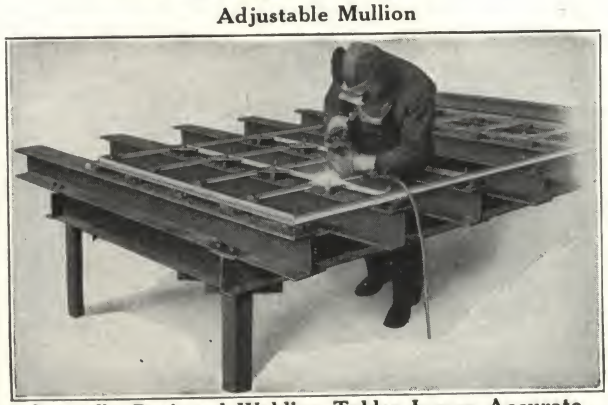
The horizontally pivoted ventilator push bar is attached to the bottom of the ventilator at one side of the center with a *heavy pressed metal hinge,* which gives a universal joint to the bar. When the ventilator is closed the push bar folds back, parallel to the face of the window, against a strike plate which is bolted to the fixed portion of the window at the center. At the side of the ventilator opposite the hinge is a locking clip bolted to the ventilator. The hinge, strike plate and locking clip are so located that when the push bar is in its locking position, the bar presses against the center strike plate, thus drawing the ventilator into tight weathering contact and at the same time locking it against opening.



Adjustable Mullion

Federal Commercial and Architectural Projected Window Bronze Friction Guides

As the smooth operation of projected ventilators depends upon the friction guide, the proper design of this feature is of importance. The Federal bronze friction guide is designed to eliminate the scraping action of the ordinary bronze shoe used on competitive windows. A guide angle is provided on each jamb of the ventilator opening, which serves to hold the ventilator in its proper location at any degree of opening. *A bronze yoke, which has a hardened steel ball,* slides on this guide angle. The friction which holds the ventilator in any desired position is obtained by the pressure of a spring in the friction guide forcing the steel ball against the edge of the guide angle. In this way rubbing or scraping of the friction guide against the sides of the ventilator opening is eliminated and a smooth and positive acting ventilator adjustment is obtained.



Specially Designed Welding Tables Insure Accurate Dimensions and Absolute Squareness

Pressed Steel Hinge with Brass Pin

S. H. POMEROY CO., INC.

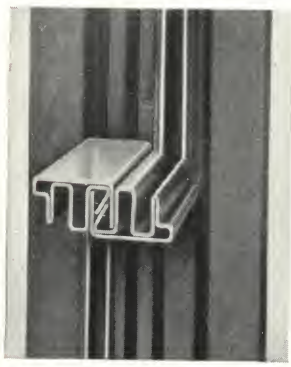
Pioneers Since 1897 in the Manufacture of Double-Hung Windows
Steel—Bronze—Aluminum

280-294 East 134th Street, NEW YORK, N. Y.
REPRESENTATIVES IN PRINCIPAL CITIES

POMEROY "SUPERIOR TYPE" WINDOWS
Models—(H) Heavy (I) Intermediate (L) Light

The "Superior Type" designed by Pomeroy to meet the recent architectural trend toward narrow lines, is the latest development in window construction and marks a tremendous advance in the Double-Hung Window Industry. The heavy tubular sections of sash, having slender lines, and flush welded at corners, present a slenderness and refinement of finish not previously attainable and still maintain the rigidity of construction and integral weathering for which Pomeroy Windows have always been distinguished.

The formation of the heavy tubular sections of sash for "Superior Type," as shown, is made possible by the use of the most modern rolling machines which, being calibrated to the exactness of 1/100 in., assure the accuracy essential in integral weathering and easy operation.



Meeting Rails

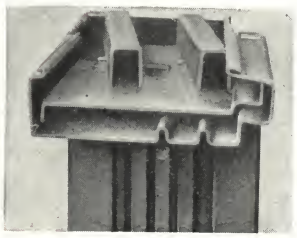
Permanent weathertightness of meeting rail is assured by the embodiment of Pomeroy's patented seven-way weather retardants.

Air leakage at meeting rail ends is effectively checked by a specially designed wedge block. No applied weatherstripping is necessary. Special attention is called to the narrowness of the Pomeroy Meeting Rail. Its overall dimension from top to bottom is only 1⅛ in., a very important advantage, as it reduces the meeting rail line to practically the width of the narrow muntin bar. Particular attention is called to the flush top design of the meeting rail, a sanitary feature which eliminates pockets for the lodgment of dust and dirt—highly desirable for institutional and residential installations.

Bottom Rail

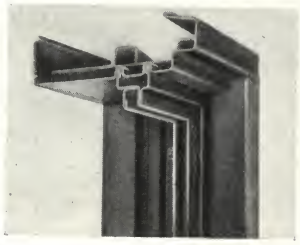
The bottom rail of lower sash engages steps of sill and spring bronze weatherstrip is incorporated—the only applied weatherstripping in the entire window. The sill design is such that a three-point contact can be effected when window is fully closed. The weatherstrip permits contact between sash and sill, with meeting rail slightly open for ventilation.

Note particularly, the undercut below the outside flange of the bottom rail. The effect of this undercut is to dissipate the force of driving rain and wind and to prevent water from lodging under the bottom rail, which would be possible if the sash rested directly at the sill level.



Pulley Assembly

The pulley assembly, consisting of a heavy steel base and housings holding the pulley wheels, interlocks with head and jamb, tying them strongly together. Jambs and sills are similarly united. Pulley wheels are solid machined steel, with self-lubricating bronze bushings and hardened steel axles. Grooving of wheels is of special design to receive the sash chain and keep it in a true line of travel.



Stiles

Inside and outside flanges of stile of tubular sash engaging and operating in deep weathering grooves of pulley stile of jamb.

Note how the metal of the weathering flange is returned upon itself to provide a smooth, rounded traveling surface and also how the two flanges form the Pomeroy Double-Weathering feature, which does not require applied weatherstrippings.

Head

Showing head of frame with inside and outside integral weathering flanges of upper rail of top sash engaging in corresponding grooves in soffit of head of frame. No applied weatherstripping is required.

THE POMEROY "STANDARD TYPE" WINDOWS
Models—(S) Light (M) Hollow Metal

The Standard Type Window embodies those basic essentials of window construction distinctive of Pomeroy Windows and the design of its moulded sash members closely resembles, in appearance, the lines of a moulded wood sash. This type lends itself to buildings where this architectural effect is desired.

The rails and stiles of sash are constructed of one piece of metal, forming tubular moulded sections, which are rigidly assembled by a specially devised lapping and interlocking procedure supplemented by a welding process.

The members of the frame, exclusive of parting and closure strips, likewise are formed of one piece of metal and assembled in the same manner.

In designing the members of frame and sash and the method of assembling, careful thought was given to the Pomeroy features of integral weathering and ease of operation.

GENERAL WINDOW INFORMATION

Materials and Construction—Pomeroy Double Hung "Metal" windows are made throughout of hot dipped galvanized copper-bearing steel and are given a shop coat of specially prepared metallic primer.

Note: Committee A-5 of the American Society for Testing Materials states: "We have now reached a point where we may definitely conclude that copper-bearing metal shows marked superiority in rust-resisting properties as compared to non-copper-bearing metal of substantially the same general composition—under atmospheric conditions.

"If it is desired to construct windows of bronze, or aluminum, specifications and details will be furnished on request."

Codes, Underwriters' Requirements, etc.—Pomeroy Double Hung "Metal" windows meet usual municipal code requirements; and the specification requirements of the Federal Specifications Board. With malleable iron sash locks and 1¾ in. muntins they meet all requirements of the Underwriters' Laboratories, Inc., and may be labeled.

Mullions and Grouping—Windows may be used singly or grouped with mullions between. The standard width mullion is 7¾ in. The exterior face is recessed, the interior face plain, matching the interior face of the jamb. Where specially required, 5 in. wide and 2½ in. wide mullions with special pulley arrangements can be furnished.

Lights and Muntins—The sash may be single light or be subdivided by muntins (1 in. in width except where labeled windows are required. The muntins for labeled windows are 1¾ in. wide.) If subdivided the number of lights and arrangement of the muntins will be as indicated by the architect on his drawings.

Transoms—Stationary or vented transoms may be furnished where required.

Special Heads—Circular or curved head windows when required to meet architect's design can be furnished in standard sections.

Glazing—The sash are furnished open, ready for glazing at the job. Stiles and rails are applied with inside glazing beads. Interior caps of muntins are removable and held in place by oval head screws.

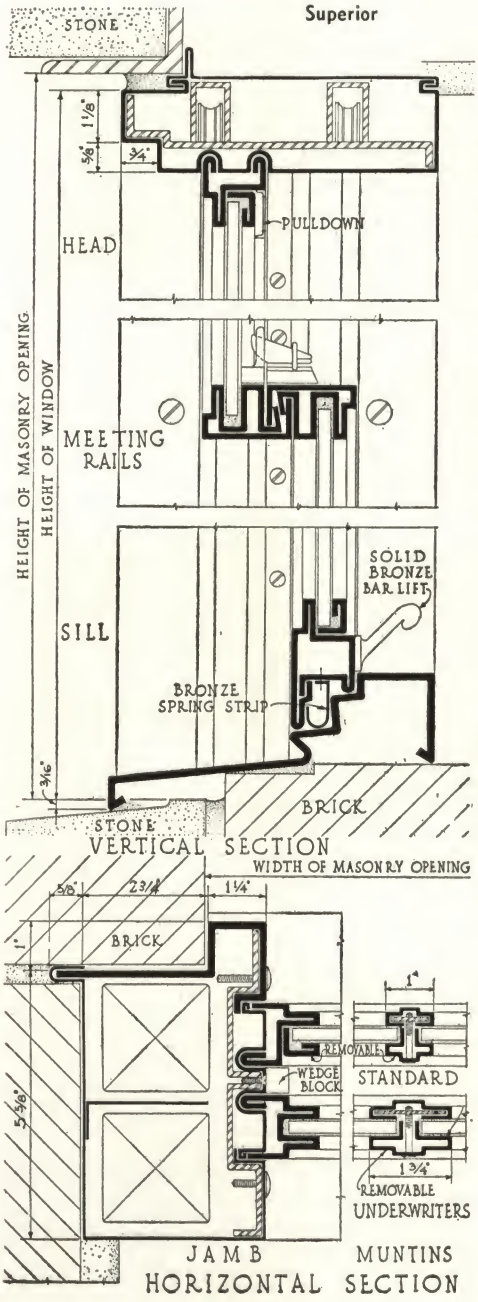
Air Infiltration Data—Copies of tests performed by Pittsburgh Testing Laboratory, indicating a maximum permanent weathertightness, will be furnished on request.

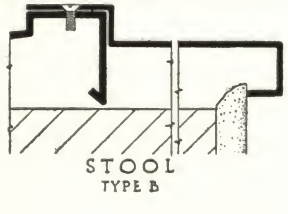
Gauges—The table below designates four classifications predicated on gauges of metal. The "Superior Type," Models "H," "I" and "L" conform respectively to the Heavy Steel, Intermediate Steel and Light Steel groups and the "Standard Type," Models "S" and "M" conform respectively to the Light Steel and Hollow Metal groups.

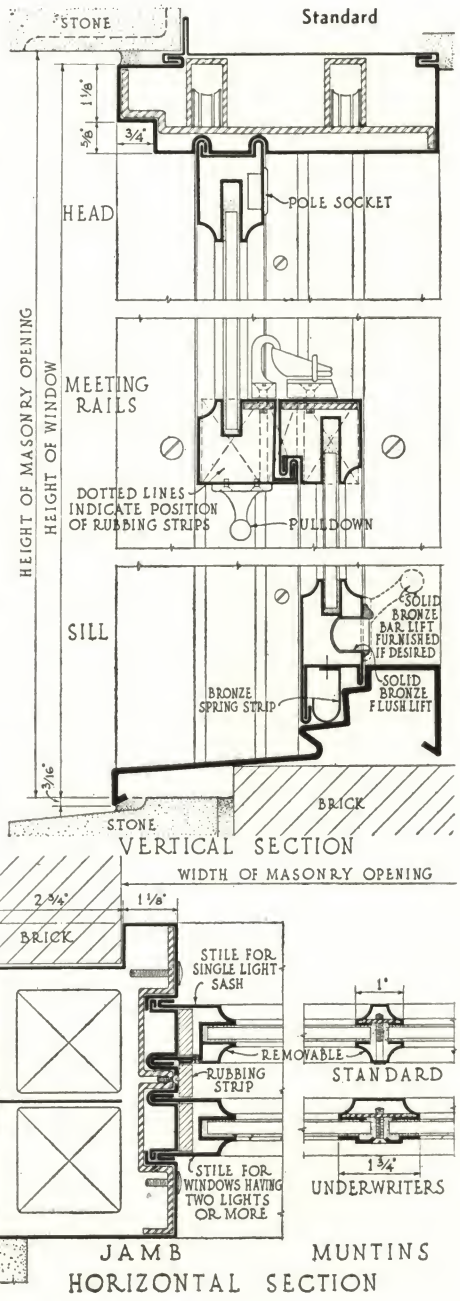
CLASSIFICATION DESIGNATION

Component part of window	Heavy steel	Intermediate steel	Light steel	Hollow metal
Head.....	16 ga.	16 ga.	18 ga.	20 ga.
Sill.....	12 ga.	14 ga.	14 ga.	14 ga.
Hanging stile..	12 ga.	12 ga.	18 ga.	20 ga.
Weight box...	16 ga.	20 ga.	18 ga.	20 ga.
Cross rails....	14 ga.	14 ga.	16 ga.	20 ga.
Side rails.....	14 ga.	14 ga.	16 ga.	20 ga.

Note: *When the "Standard" Window is made to conform to the Light Steel classification, cross rails are constructed of 20-gauge and side rails of 18-gauge galvanized steel.*







ESTABLISHED 1876

HERRMANN & GRACE CO.

Manufacturers of "Alumex" Extruded Aluminum Double Hung Windows

FACTORY AND MAIN OFFICE
671-689 Bergen Street, BROOKLYN, N. Y.

DESCRIPTION

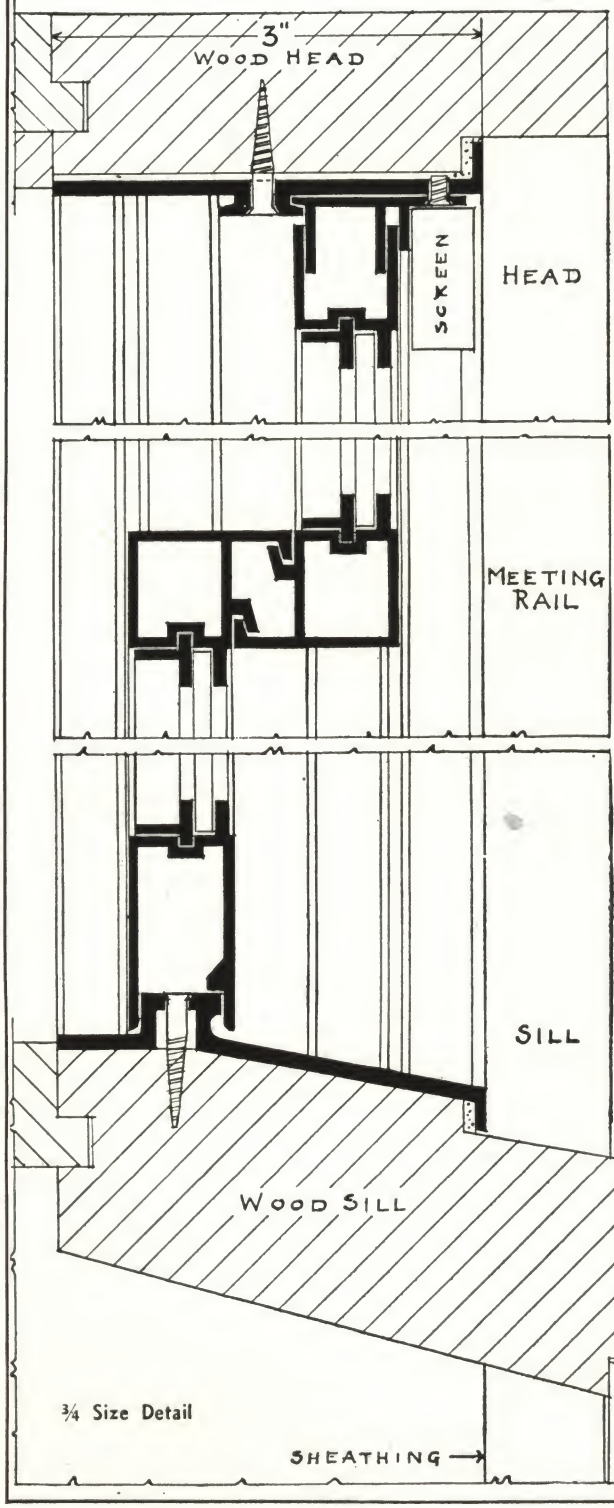
Material

Extruded 53-ST-5 aluminum with a tensile strength of 22,000 lbs. per sq. in.

Assembly

Alumex windows are entirely constructed with mitred and welded corners. Aluminum frame is fitted to a wood sub-frame which is an integral part of the window.

The sash are installed in the guide strip and operated by spring balances with tape.



Weather Insulation

Sash are weather stripped with zinc in all sliding parts.

Hardware

Finished hardware is our own standard design, of solid white metal.

Glazing

Cork strips are inserted between the glass and sash members. Glass is secured in place by an improved glass stop which fits into a groove, insuring rigidity. Glass may be divided with muntins as desired.

Screens and Shades

Alumex windows are designed to receive aluminum screens and shade brackets.

Salient Features of Alumex Windows

Lightness of weight combined with maximum strength.

Outstanding feature of aluminum is its resistance to atmospheric corrosion.

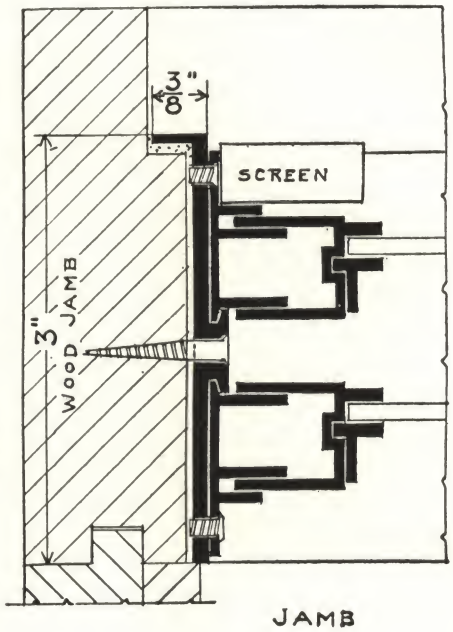
Adjacent surfaces are free from danger of streaking or staining as the compounds of the aluminum used in Alumex windows are colorless.

Ease of operation—All parts are in perfect alignment. Sash will not bind, stick or swell.

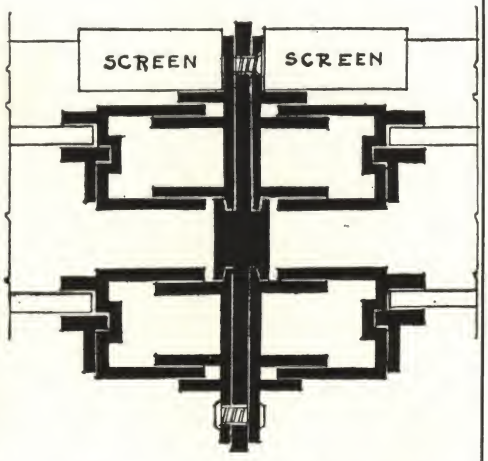
Narrow mullions — Only 2½ in. in width from glass to glass.

Narrow members of windows insure admittance of more light.

Designed by experts for every type of wall construction.



JAMB

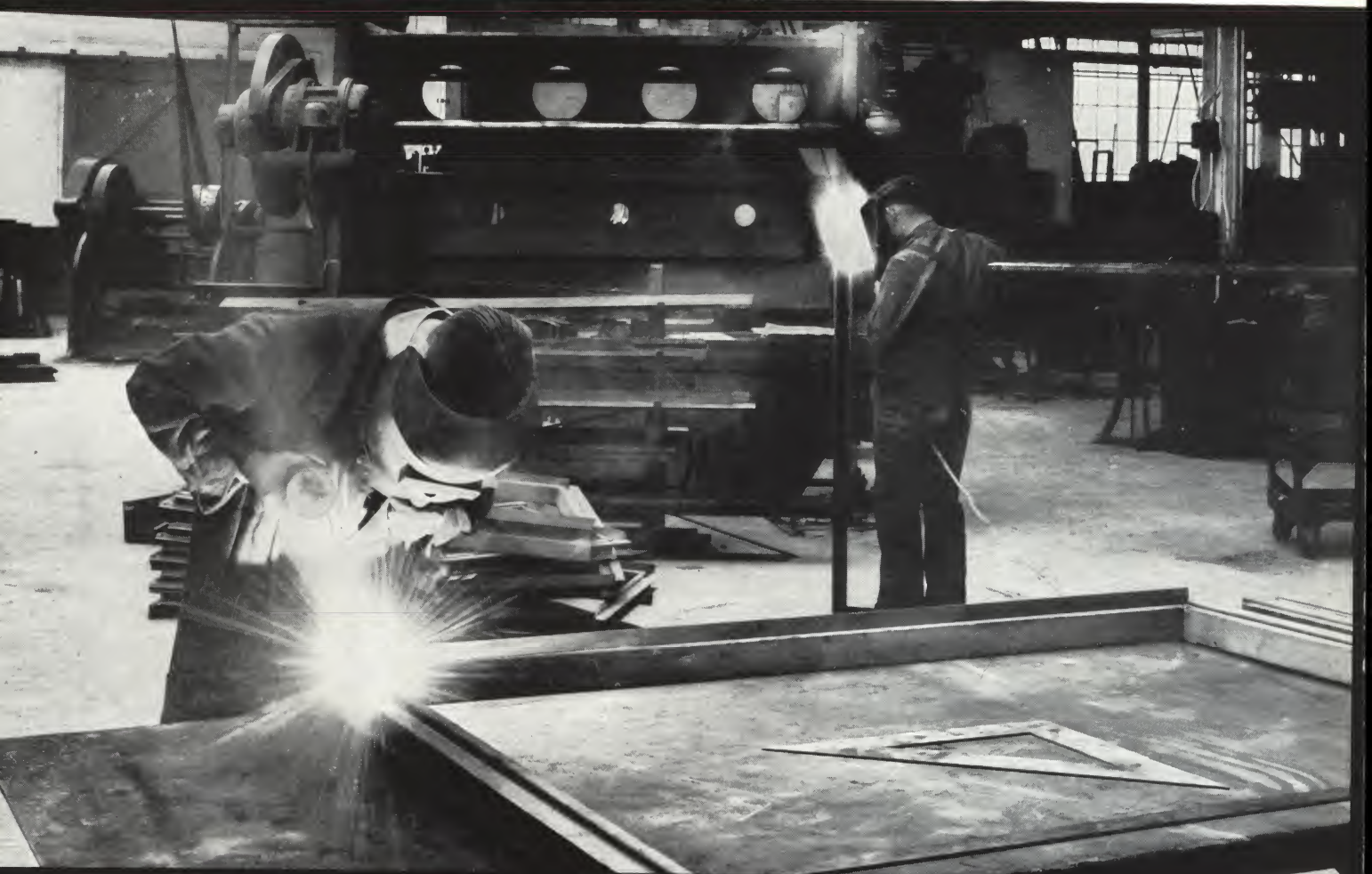


MULLION

MUNTIN

ALUMINUM TYPE "A" WINDOW

"The Name HOPE'S *Guarantees"*



SOLID WELDED · NO LOOSE LININGS

818 WINDOWS 1936

· HOPE'S · WINDOWS · INC · JAMESTOWN · NEW · YORK ·

THE HOPE STANDARD OF QUALITY

HOPE'S have been making windows for over a hundred years and have built up what is now known throughout the world as "the HOPE Standard of Quality." This standard is without extravagance, but embodies all those features which our experience has taught us are necessary for permanent service in permanent buildings. We make windows of all kinds and whether it is an elaborate bronze window for a monumental building, or a simple steel casement for a small house, the same care is taken that it is of an appropriate design and that it shall serve its purpose properly.

·SPECIFICATIONS·

Form of Specification for Custom Made Casements

All windows shall be HOPE'S WINDOWS, manufactured in Jamestown, New York, by HOPE'S WINDOWS INC. from solid rolled steel sections of suitable design and weight for the size of the openings. This contractor shall not commence fabrication until shop drawings bear the approval stamp of the architects. All bars shall be hydraulically straightened and free from hammer marks or distortions of any kind. All corners shall be accurately machined, electrically welded and cleaned free from flux. Frames and casements shall be solid welded units and shall provide continuous double weathering contact without the aid of loose or applied linings. Horizontally and vertically pivoted casements shall be hung on patent bronze cup pivots. The former shall be fitted with solid bronze spring catch, cord eye and pulley and the latter with solid bronze fasteners and double bar adjusters; when more than 5 ft. high, double grip bolts shall be supplied. Top hung, bottom hung and side hung casements shall be hung on drop forged steel pivots bronze bushed. Top hung casements shall be fitted with solid bronze cam opener capable of convenient pole operation. Bottom hung casements shall be fitted with solid bronze spring catches and concealed friction side arms. Side hung casements both outward and inward opening over 5 ft. high shall be fitted with solid bronze fasteners having double grip bolts, double bar adjusters, and intermediate hinges: under 5 ft. the double grip bolts and intermediate hinges shall be omitted. All hardware shall be individually fitted by skilled mechanics at the factory. Fixed sash shall be made from channel sections which provide the same sight line and glass plane as the casements. Moulded steel glazing beads attached with brass screws and having mitered corners shall be neatly fitted to casements and fixed sash. All steel work shall be cleaned free from rust and scale and painted two coats DuPont special rust-resisting paint, each coat baked on separately. The installation of the windows shall form part of this contractor's work. Windows to be properly bedded and pointed inside and out with HOPE'S Mastic Cement, the whole guaranteed weathertight. Glass and glazing by glazing contractor; field painting by painting contractor.

For full sized details, see page 3. For more complete information, refer to our Casement Catalogue or to any of our sales offices.

Form of Specification for "Biltin" Sub-frames

All sub-frames, mullions, transom bars, swinging and stationary sash, to be of steel, bronze or aluminum as manufactured by HOPE'S WINDOWS INC., Jamestown, N. Y.

This contractor shall furnish and deliver to the building HOPE'S "Biltin" sub-frames of type and profile shown on drawings, in time to suit the requirements of the building. Sub-frames shall be of No. 12 gauge steel, with corners welded solid to form one complete frame, except where of too great a size for shipment in ordinary box cars, in which event they shall be assembled at the factory with screwed and plated joints, dissembled, packed and shipped "K. D." for assembly by general contractor. All corners shall be properly cleaned off and the sub-frames shall be painted two heavy coats of special rust-resisting paint, each coat separately baked on. They shall be set up plumb and true and built in and pointed by the mason contractor as the walls go up. The wood spreaders or braces which are included to insure the sub-frames hold square and true to shape shall be left in until the casements are installed.

After plastering is completed, this contractor shall remove braces and shall install casements, taking care that the joints between the casements and the sub-frames are properly filled with HOPE'S Mastic Cement neatly pointed inside and out. All casements shall be properly adjusted and shall operate freely and smoothly before acceptance by the architect.

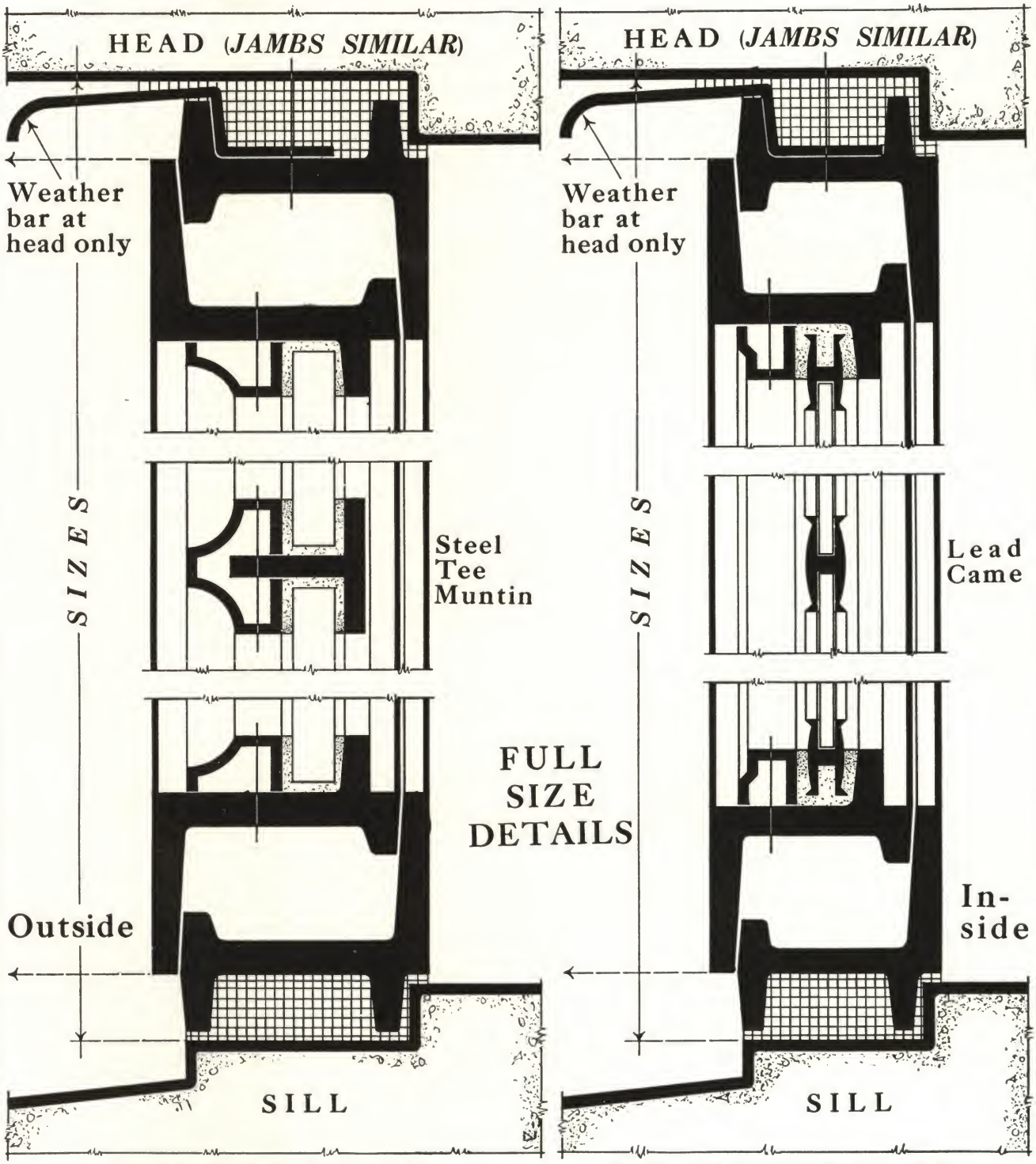
Please refer to our branch offices for specifications covering bronze or aluminum.

For details, see page 4 and refer to Catalogue, No. 15.
For Standard Cotswold Casement specifications, refer to pages 8 and 9.
For Holford and Econwin Window specifications—screened or non-screened—refer to page 7.

UNDERWRITERS' LABEL

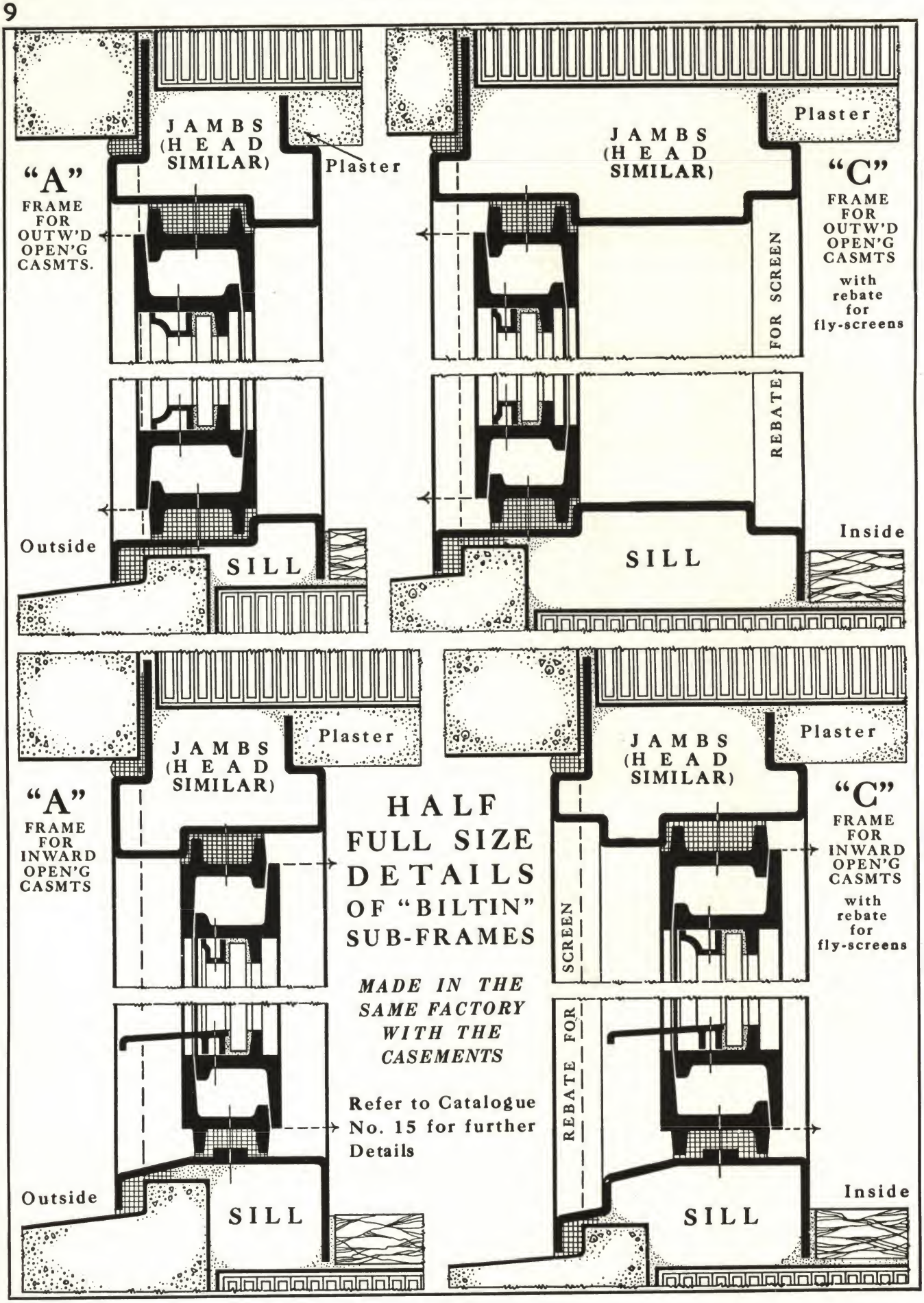
The Underwriters' Label can be attached to our "Austral," "Cotswold," "Hopkins" and Light Standard Windows, if desired.

· CASEMENTS · OPENING · OUTWARDS ·

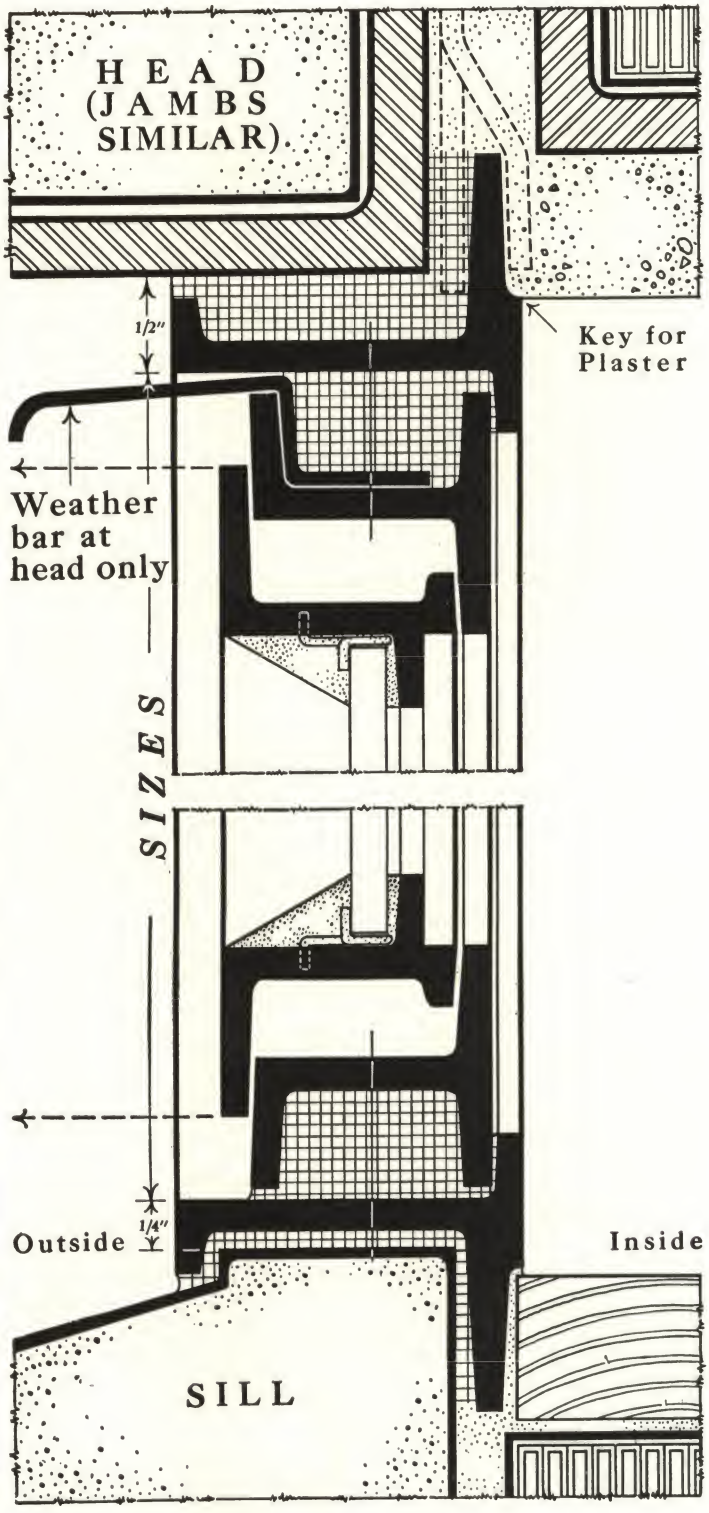


SIDE HUNG CASEMENTS, TOP HUNG CASEMENTS SIMILAR

Our sections No. 3000 and No. 1000 may be glazed either from outside or from inside. Appearance usually governs choice, but we recommend outside glazing. Casements are made to open outwards as shown above, or by reversing the sections they can be made to open inwards, hinged at side or bottom. Or they may be pivoted vertically or horizontally. For more complete information, refer to our Casement Catalogue or to any of our sales offices.


JAMBS (HEAD SIMILAR)
Plaster
"A" FRAME FOR OUTW'D OPEN'G CASMTS.
Outside
SILL
JAMBS (HEAD SIMILAR)
Plaster
"C" FRAME FOR OUTW'D OPEN'G CASMTS with rebate for fly-screens
FOR SCREEN
REBATE
Inside
SILL
JAMBS (HEAD SIMILAR)
Plaster
"A" FRAME FOR INWARD OPEN'G CASMTS
HALF FULL SIZE DETAILS OF "BILTIN" SUB-FRAMES
MADE IN THE SAME FACTORY WITH THE CASEMENTS
Refer to Catalogue No. 15 for further Details
Outside
SILL
JAMBS (HEAD SIMILAR)
Plaster
"C" FRAME FOR INWARD OPEN'G CASMTS with rebate for fly-screens
SCREEN
REBATE FOR
Inside
SILL

· ROLLED · STEEL · SUB-FRAMES · NO. 2040 ·



FULL SIZE DETAILS

Showing a standard Cotswold Casement installed in a Standard No. 2040 sub-frame.

In 1920 we designed a solid rolled steel No. 2040 sub-frame for use in masonry openings having plastered reveals, where a narrow sight line was desirable and where low cost was an important factor.

Bonded into the masonry openings as the walls are being built, this sub-frame provides a perfectly weathertight joint and is a big improvement over the angle fin detail which it supersedes because it permits postponing the installing and glazing of the windows until after plastering when clean conditions can be relied upon.

They have enjoyed such nation wide acceptance that we keep No. 2040 sub-frames in stock in standard sizes for use with our Cotswold range of standard casements. They can also be supplied in custom shapes and sizes at a slight extra cost.

Form of Specification for No. 2040 Rolled Steel Sub-frames

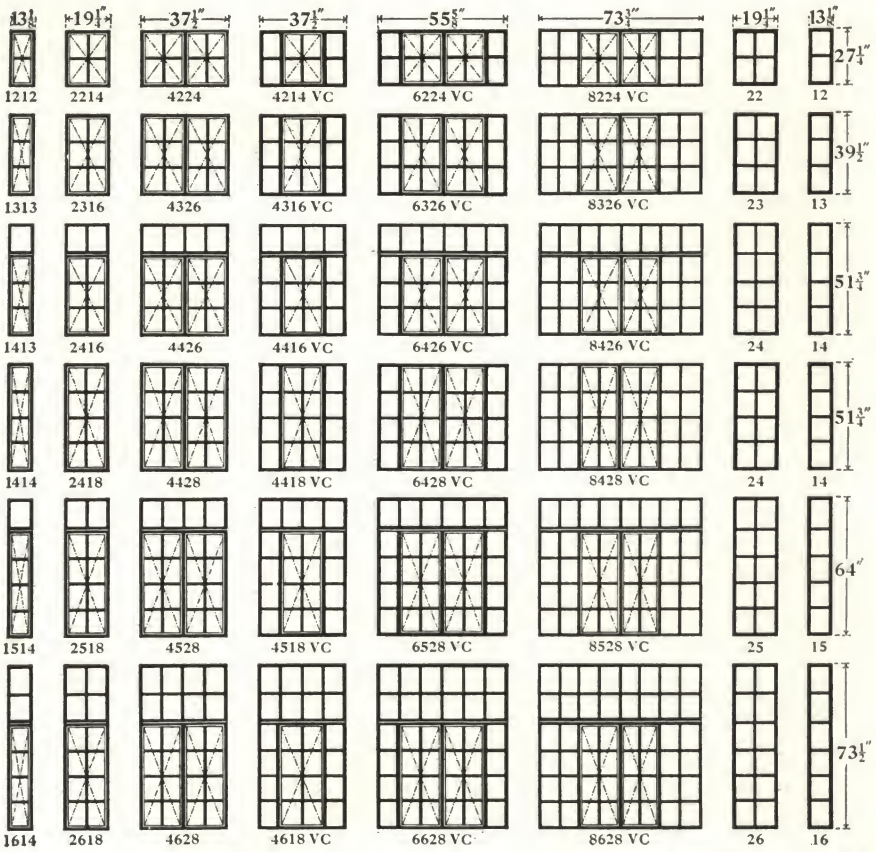
All casement windows and sub-frames shall be of solid rolled steel sections as manufactured by HOPE'S WINDOWS INC., Jamestown, N. Y.

This contractor shall furnish and deliver to the building Hope's "No. 2040" sub-frames to the shapes and sizes shown on the drawings. When specifying 2040 frames for Standard Cotswold Casements, specify that they are to be in standard types and sizes as shown by reference numbers on elevations in accordance with the standards established by Hope. They shall be painted two heavy coats of special rust-resisting paint, each coat separately baked on, and they shall be delivered to the site in time to meet the requirements of the building. They shall be set up plumb and true and built in and pointed by the mason contractor as the walls go up. The wood spreaders or braces which are included to insure the sub-frames hold square and true to shape shall be left in until the casements are installed. After plastering is completed, this contractor shall remove braces and shall install casements, taking care that the joints between casements and sub-frames are properly filled with Hope's Mastic Cement neatly pointed. All casements shall be properly adjusted and shall operate freely and smoothly before acceptance by the architect.

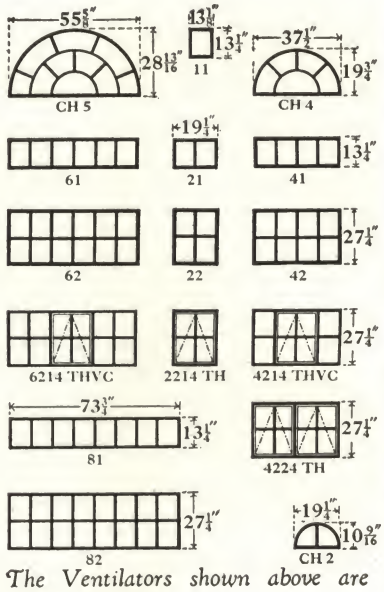
Note: *For more comprehensive details, refer to Catalogue No. 15, or to any of our sales offices.*

· HOPE'S HOLFORD CASEMENTS ·

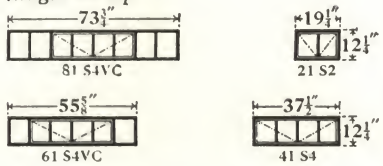
• METAL • WINDOW • INSTITUTE • STANDARDS • • TYPES • AND • SIZES •



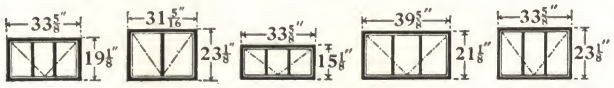
For position of dimensions see page seven



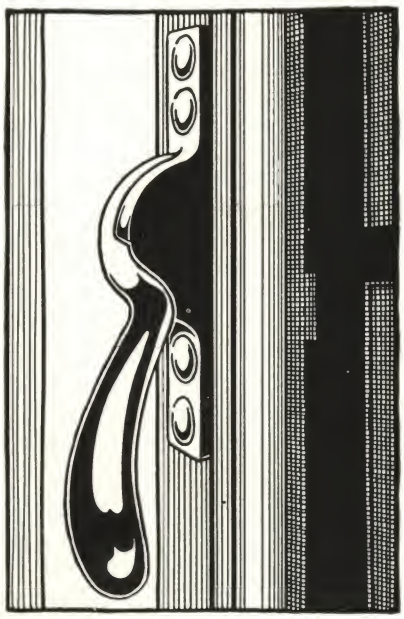
The Ventilators shown above are hinged at top



• SILL • TYPES • *for attachment to windows as sill ventilators*



BASEMENT • TYPES

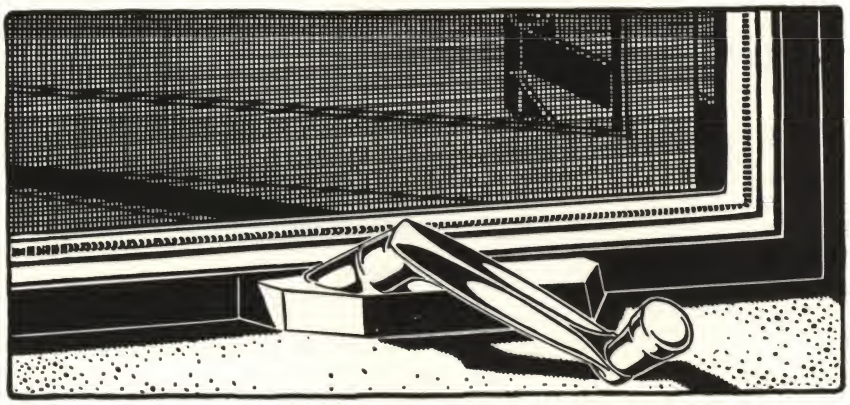


· FASTENER · (NO. 38-3) ·
· STATUARY · BRONZE · FINISH ·

·HARDWARE·

The hardware illustrated is for screened casement. It permits casement to be opened, closed and secured without disturbing screen.

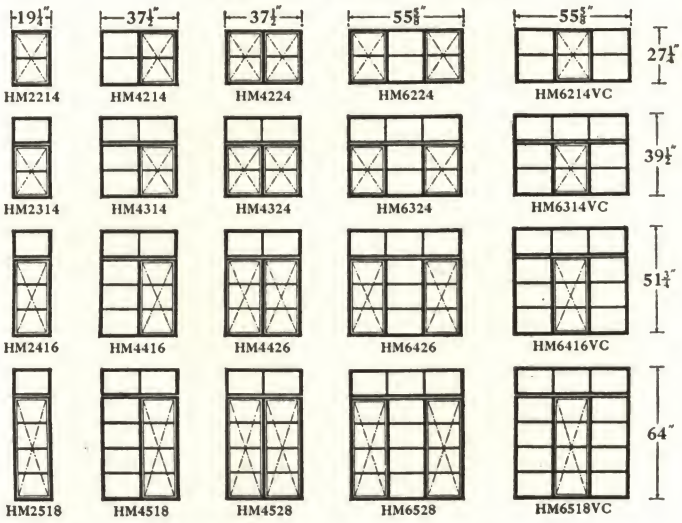
The hardware for non-sereened casements consists of fastener having statuary bronze finish and cleaning hinges, friction type.



ROTARY ADJUSTER NO. 73

HOPE'S · ECONWIN · CASEMENTS

· TYPES · AND · SIZES ·



SPECIFICATION

All windows shall be Hope's Holford (or Econwin) Windows (with integral screens) in the standard types and sizes as shown by reference numbers on the drawings. Casements shall consist of inner and outer frames of solid rolled steel sections, having a combined weight of not less than 2.0 lbs. per lineal foot (exclusive of hardware), solid welded at all corners and neatly cleaned off. Sections shall provide a continuous two-point weathering contact between the inner and outer frames throughout the perimeter of the casement without the aid of loose or applied linings. All casements shall be side hinged to open out, hung on cadmium plated mild steel cleaning hinges welded solid to the window flanges and having solid bronze pintles and washers. Muntins shall consist of rolled steel tee sections, ¾ in. on face. All steel work shall be painted one coat of special rust-resisting gray primer baked on.

A sufficient quantity of Hope's Mastic cement (1 lb. per 7 ft. of perimeter), is provided free of charge for proper installation of all windows.

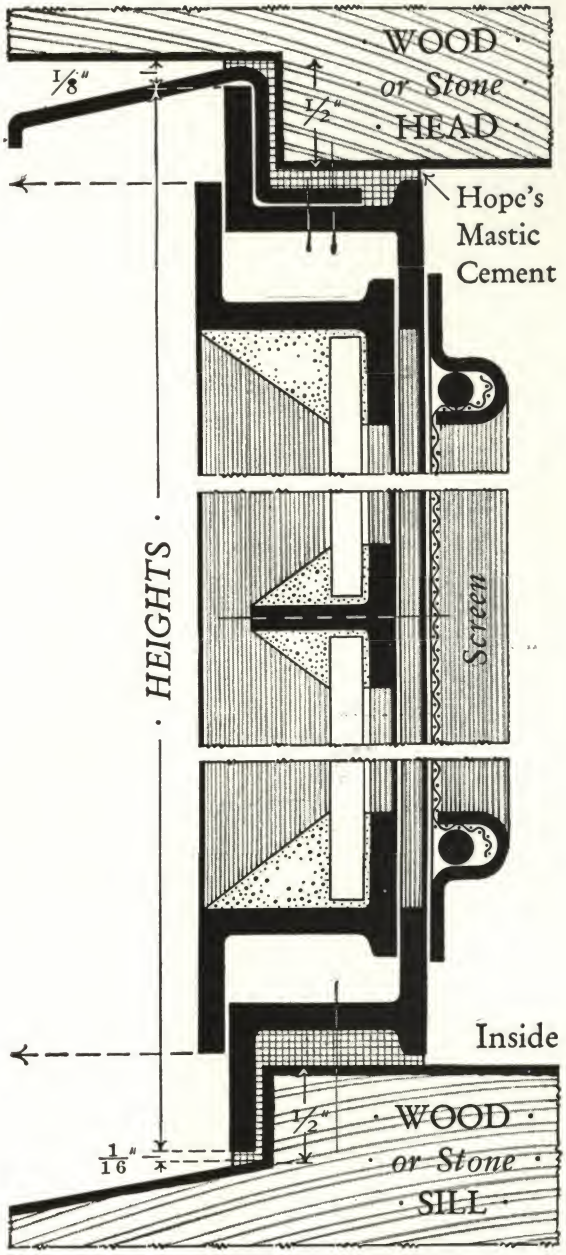
Where flat screens are required, all casements shall be fitted with special hardware, finished statuary bronze to Hope's standards, so designed and fitted as to permit the proper operation of the casement without any slots or holes through the screen.

Screens shall be of standard sizes as supplied by Hope's Windows, Inc., and shall be carefully packed and shipped separately. The screen frames shall be U-shaped and made from open hearth steel, strongly welded at corners and galvanized after all cutting and abrasive operations have been completed. The screen cloth shall be standard weight old English gauge 16-mesh Anaconda bronze wire, easily rewireable.

(Where casements do not require to be screened, omit the two foregoing paragraphs and substitute the following): All casements shall be fitted with Hope's standard fasteners, statuary bronze finish, and hung on Hope's projecting friction hinges.

Where possible, the installing of the windows should be done by Hope's skilled workmen. Glass and glazing by glazing contractor, field painting by painting contractor.

If wood surrounds are required, specify: Wood surrounds of clear heart redwood shall be supplied by the casement manufacturer of corresponding sizes to the casements. They shall have halved mitred joints and shall be shipped to the job with the casements.



· FULL · SIZE · SECTION ·

All windows are hinged at side opening outwards, divided into panes with steel tee muntins, but they can be supplied without muntins either for leaded lights which we stock in standard sizes or for plain sheets of glass.

Cleaning hinges are of cadmium-plated mild steel, welded solid into the frame. The great depth and strength of the bronze pintles prevent any possibility of the casement sagging.

For further details, refer to Catalog No. 40, or to any of our sales offices.

· HOPE'S · SCREENED · COTSWOLDS ·

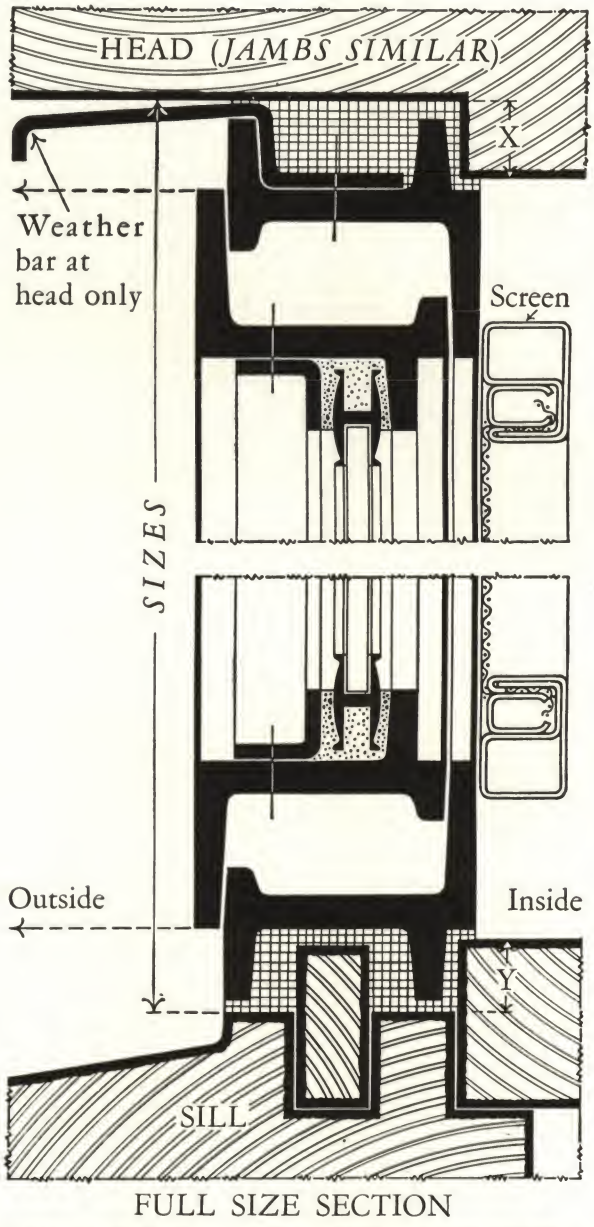
Specifications for HOPE'S Screened Cotswolds

All windows shall be HOPE'S solid steel screened Cotswold casements in the standard types and sizes they have established as shown by reference numbers on the elevations (*or custom made casements using heavy casement sections or Universal intermediate sections*) as manufactured by HOPE'S WINDOWS, INC., Jamestown, N. Y.

All windows shall be hung on bronze bushed steel pivot hinges of the projecting type to facilitate cleaning and shall be fitted with bronze casement fasteners and adjusters so designed and fitted as to permit the proper operation of the casement without slots or holes in the screens. All steel work shall be painted one coat of Du-Pont special rust resisting primer and one coat of gray, each coat baked on separately.

The screens shall be of standard sizes as supplied by HOPE'S WINDOWS, INC. The screen frame shall be U-shaped and made from open hearth steel (or from tubular steel $\frac{5}{8} \times \frac{7}{16}$ in.) strongly welded and reinforced at each corner, and galvanized. The screen cloth shall be of standard weight Old English gauge 16 mesh Anaconda bronze wire, easily rewireable.

(Continued on following page)

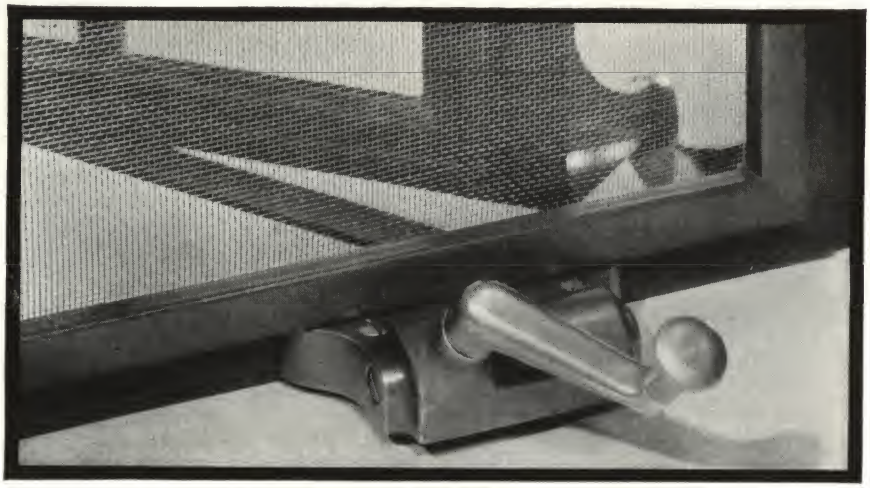


FULL SIZE SECTION

Maximum rebate including trim at head and jambs (dimension "X") $\frac{5}{8}$ in.; at sill (dimension "Y") $\frac{1}{2}$ in.

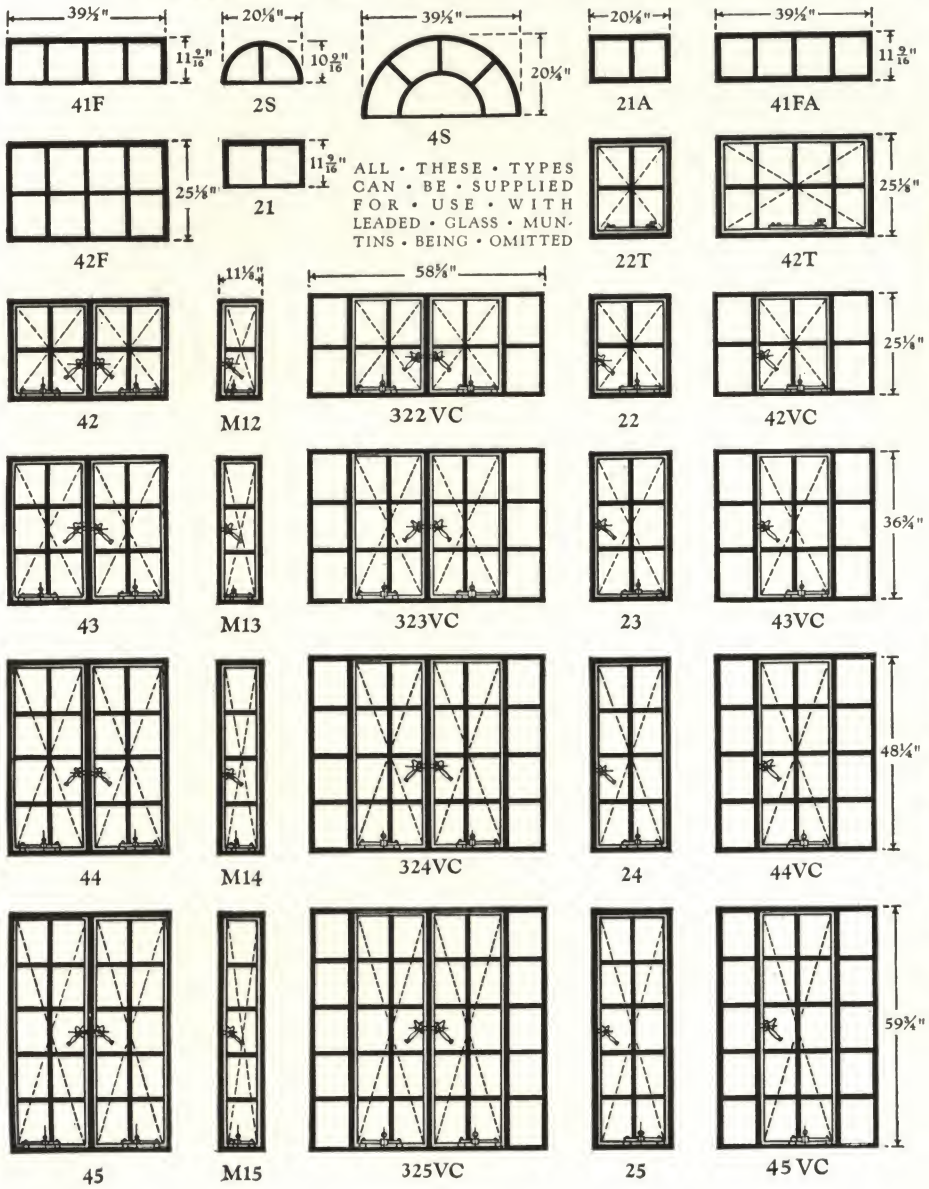
ALL HARDWARE IS IN SOLID BRONZE STATUARY FINISH

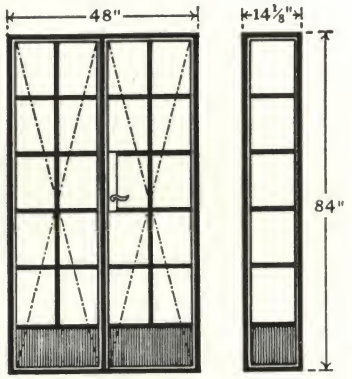
· FASTENER · (NO. 20-67) ·



· GEAR · WORM · ADJUSTER · (NO. 20-70) ·

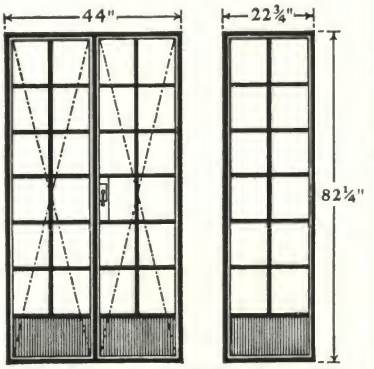
· STANDARD · COTSWOLD · CASEMENTS · & · DOORS ·





· TYPES · "W" · OR · "Y" · DOOR · WITH · SIDE · LIGHTS ·

Type "W" opens outwards, Type "Y" opens inwards. Leaded glass types are "X" and "Z" respectively.



· TYPE · "M" · DOOR · WITH · SIDE · LIGHTS ·

Type "L" is the corresponding leaded glass type. Both types open outwards only. Side lights for all doors can be one or two lights wide. Similar side lights are supplied for leaded glass types.

Specifications—***Continued from Preceding Page***

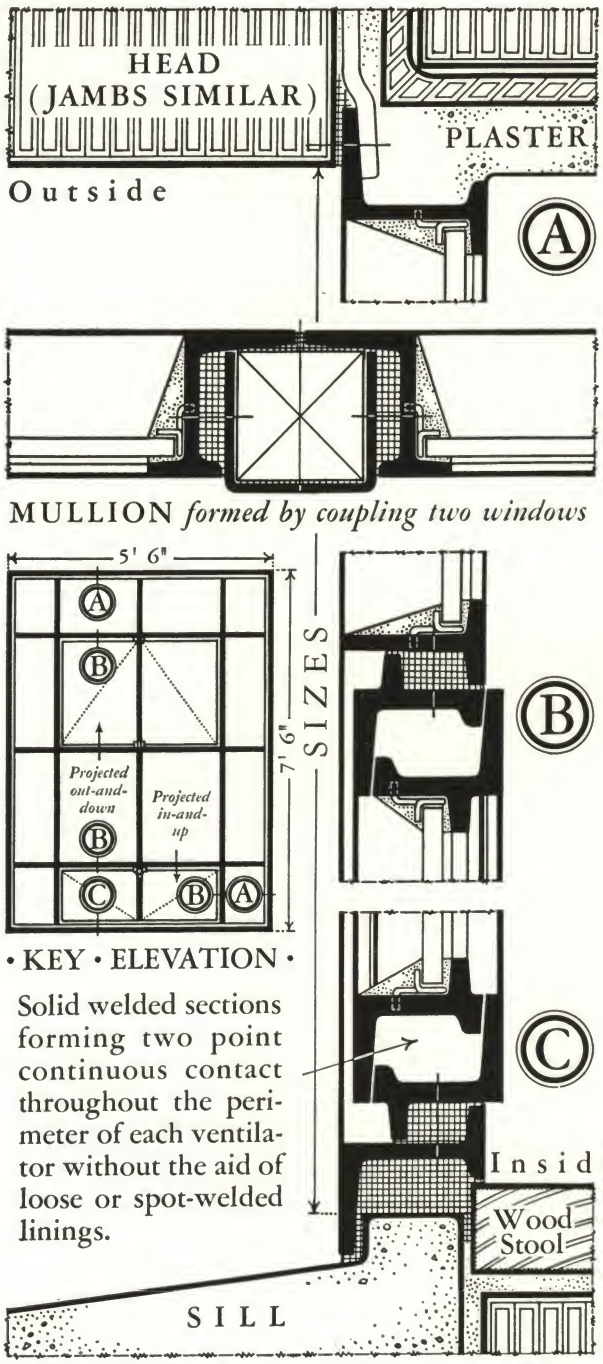
Storm sashes to take the place of screens in winter can be supplied if desired. The frames of these storm sash are to be similar in construction to the screen frames so that the same hardware will hold them in position on the casement frame. Storm sash to be glazed with best quality D.S.A. glass.

The setting of the casements shall be done by the casement manufacturer after the plastering is completed.

Doors type "W," "X," "Y" and "Z" are fitted with bronze latches and lever handles, and with cylinder locks. Types "L" and "M" are fitted with bronze cremorne bolt on the active leaf with bronze lever handles to be operated from inside or out and with safety catch to lock the doors on the inside. Cylinder locks can be supplied when required as extra equipment. Solid extruded bronze single or double rabbeted saddles can be fitted to any of these doors as required. All kick panels are double.

Note: *For further information and details, write for descriptive booklet. When leaded glass is to be furnished, refer to page 14 of Cotswold catalogue No. 14 for suitable specifications.*

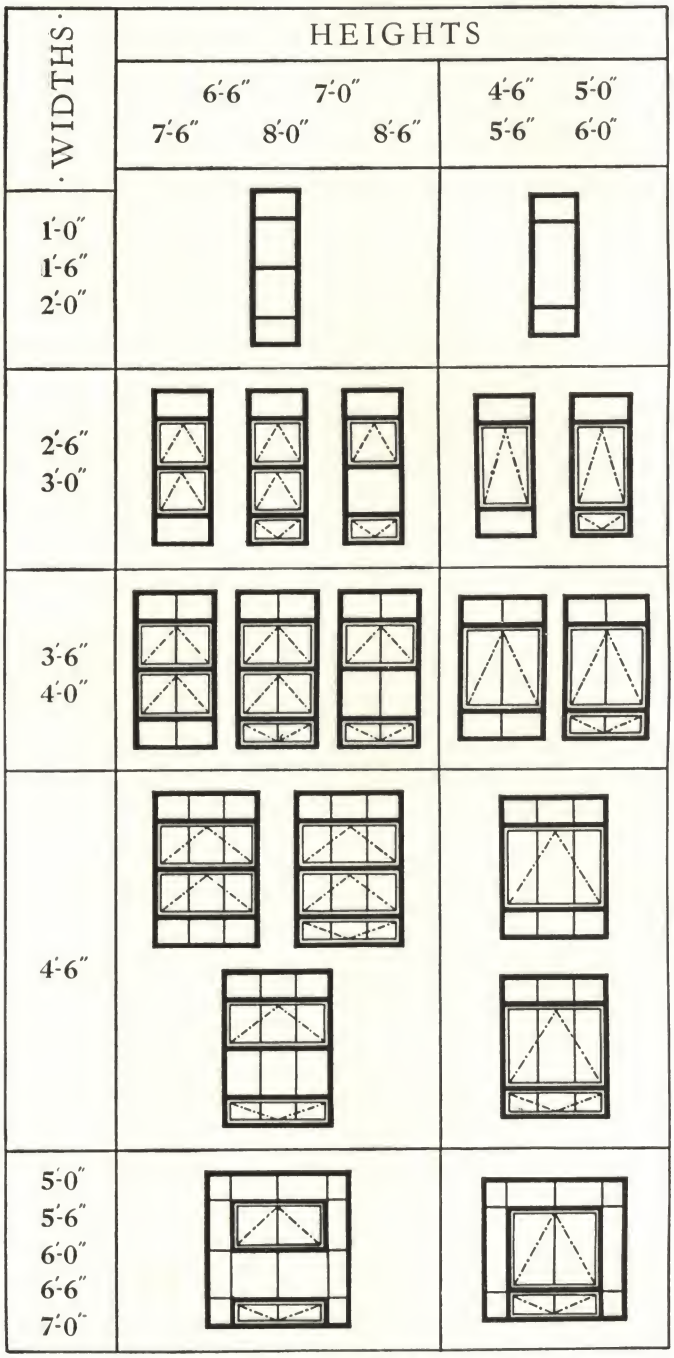
· HOPE'S · PROJECTED · WINDOW ·



· HALF · FULL · SIZE · DETAILS ·

HOPE'S Projected Windows are also solid welded, and methods of construction and sections employed are the same as for our Hopkins windows described on the next page.

Where windows are required to remain open in all weathers, opened *projected* ventilators provide maximum protection against rain. All ventilators in these windows are *projected* in or out.



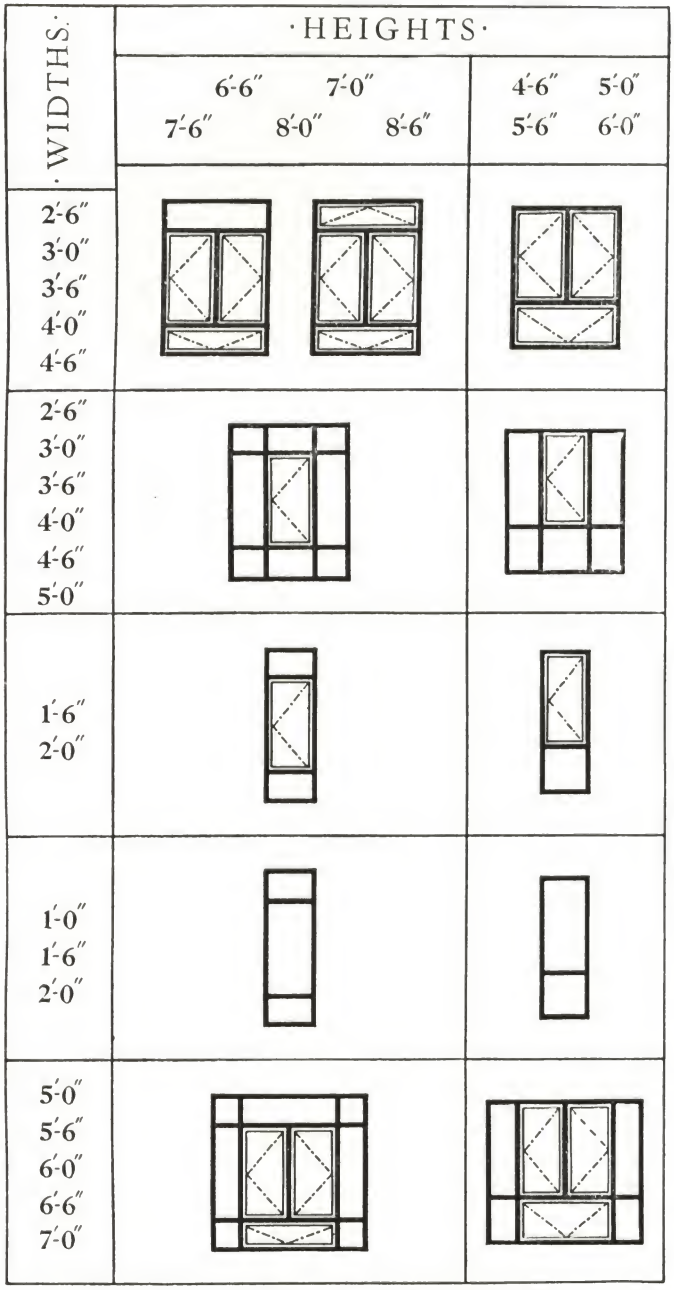
· TYPES · AND · SIZES ·

Flat screens can be provided and are most practical.

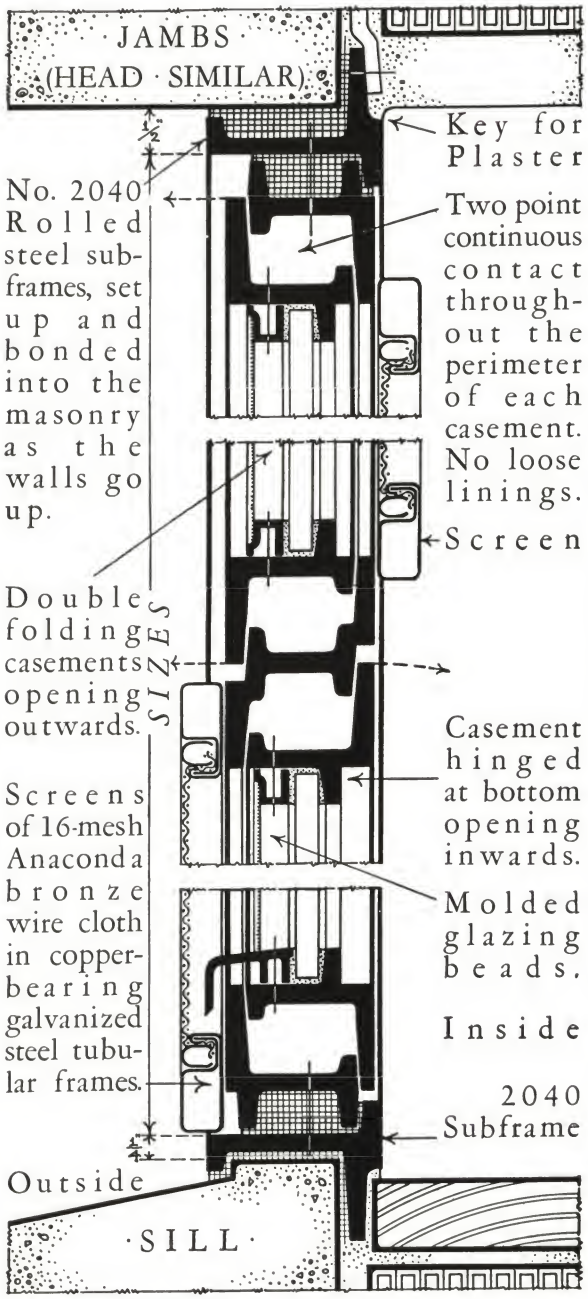
For detailed information on sections, screens, shades, and drapes, refer to our catalog No. 32 or nearest sales office.

· SOLID · WELDED · WINDOWS · :· NO · LOOSE · LININGS ·

· HOPE'S "HOPKINS" WINDOW ·



·TYPES·AND·SIZES·



HALF·FULL·SIZE·DETAILS

HOPE'S "Hopkins" Windows, whether supplied in the types and sizes illustrated in the above diagram, or in custom-built sizes as designed by the architect, are particularly suitable for public buildings, hospitals, courthouses and schools where permanency of construction, control of ventilation and simplicity of operation are desirable. Frames and ventilators are solid welded units, and continuous double weathering contact is provided without the aid of loose or applied linings. This method insures permanent construction and avoids the troubles which follow when linings are forced away by corrosion, leaving the windows useless and frequently dangerous.

HOPE'S "Hopkins" Windows are available at competitive prices and our Section 1000 having a combined weight of 3.55 lbs. per lineal ft. is used in their construction.

Note: *For full specifications, refer to Catalogue No. 18 or 32 or to any of our sales offices.*

·SOLID·WELDED·WINDOWS·:·NO·LOOSE·LININGS·

· HOPE'S · HAND-WROUGHT · LEADWORK ·

· LEAD · RAIN ·
· WATER · PIPE ·
· NO. 690 · 4x3 ins. ·

· LEAD · HEAD · NO. 666 · Width Over Ears, 29 ins. ·

· LEAD · RAIN ·
· WATER · PIPE ·
· NO. 689 · 4x3 ins. ·

· WALL · SUNDIAL · NO. 826 ·
· 36 ins. Wide x 32 ins. High ·

For complete information on lead and lead-coated copper rainwater goods, refer to Catalogue No. 72

For complete information on leadwork for the garden, refer to Catalogue No. 20

· HOPE'S · WINDOWS · INC ·

· JAMESTOWN ·:· NEW YORK ·

Kawneer

WINDOWS · DOORS
ARCHITECTURAL
METAL WORK

KAWNEER PRODUCTS

Architectural Metal Work in Aluminum, Bronze, Nickel Silver, Stainless Steel, Monel Metal, Cast and Wrought Iron

PRODUCTS DESCRIBED IN THIS CATALOG

(See Separate Catalog for Kawneer Store Front Construction)

Pages

* Light Sealair Weight-Hung Windows (Residential) . 2, 3, 4
* Medium Sealair Weight-Hung Windows (Commercial) . 5
* Heavy Sealair Weight-Hung Windows 5, 6
* Light Sealair Casement Windows 7
* Heavy Sealair Casement Windows 7, 8, 9, 10
* Rustless Metal Doors, Tubular and Flush Type 11, 12, 13, 14
* Ornamental Metal, Rolled, Extruded, Wrought, Cast 15, 16

FOREWORD

The Kawneer Company has been manufacturing display windows for over thirty years and is the pioneer in the use of rustless metal for store front construction. Following the development in store fronts it was only natural that The Kawneer Company should manufacture other types of rustless metal windows and doors.

For many years The Kawneer Company has been actively manufacturing rustless metal windows for commercial buildings, residences, ocean liners, U. S. battle ships, light houses, and many other uses.

Kawneer windows are made only of rustless metals—primarily bronze and aluminum fabricated with extruded shapes. The Kawneer Sealair Windows are particularly famous for their fine workmanship as well as the extremely low infiltration. The Kawneer patented weathering interlocks are the secret of their low infiltration. It is only by manufacturing durable weathertight windows that The Kawneer Company has furnished their windows for many of the finer buildings, residences, and over forty ocean going vessels. The standard Kawneer windows are light, medium and heavy weight double hung windows and the light and heavy casement window. We are, however, prepared to build windows for any special conditions that may arise.

The Kawneer Company gladly cooperates with architects in the solution of their problems and is always ready to work with them in connection with any form of architectural metal work.

THE

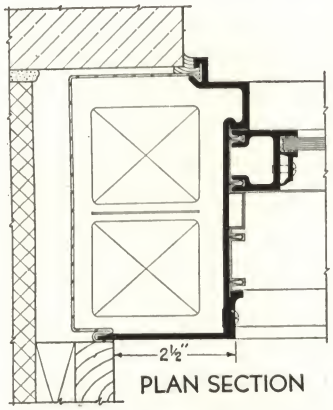
NILES **Kawneer** MICHIGAN

COMPANY

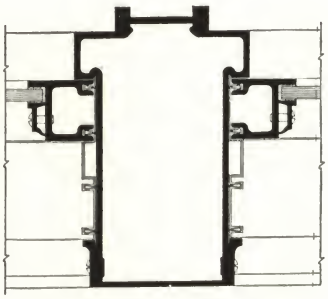
A. I. A. FILE MATERIAL AVAILABLE • Complete Full Size Details and Installation Instructions on Light Sealair and Medium Sealair Windows • Illustrated 8-page Consumer Booklet on Light Sealair Windows • "Better Windows," an illustrated 32-page booklet on all Sealair Windows • 8-page booklet on Kawneer Rustless Metal Doors • Architectural Metals, a 24-page Book of Basic Data on Metals and on Kawneer Architectural Metal Work. Any or all of these pieces will be sent on request.

HEAVY SEALAIR WEIGHT-HUNG WINDOWS

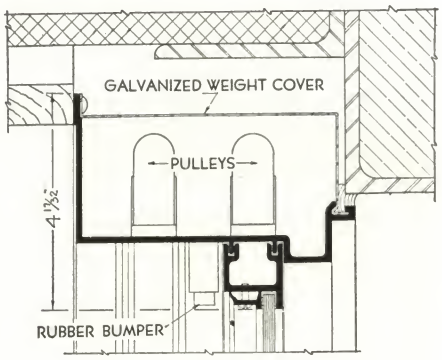
ASSEMBLY DETAILS

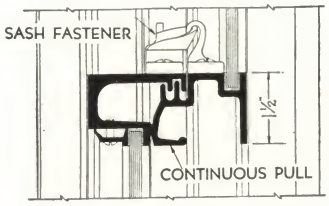


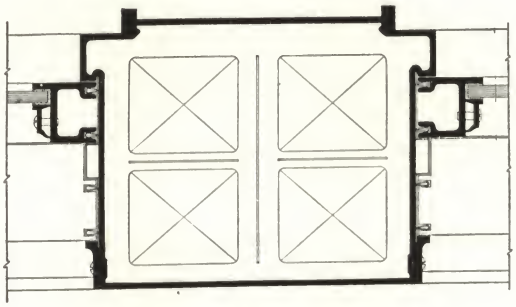
PLAN SECTION



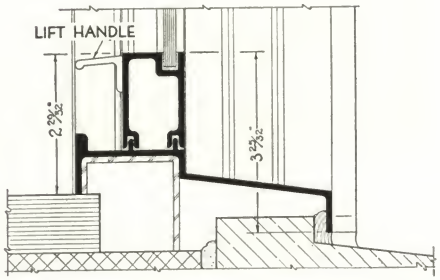
WEIGHTLESS MULLION



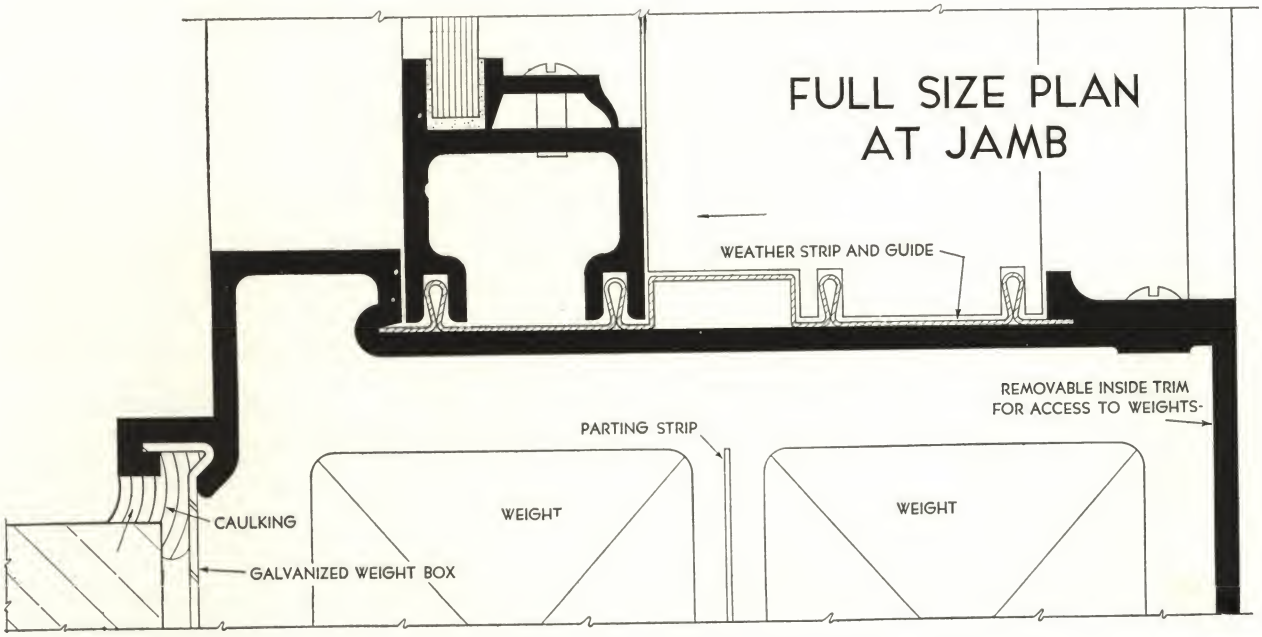




DOUBLE MULLION



TYPICAL VERTICAL SECTION



Kawneer

★ HEAVY SEALAIR CASEMENT WINDOWS

In Aluminum or Bronze

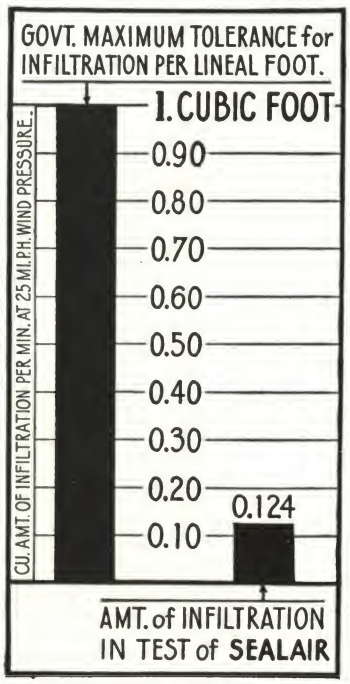
Kawneer Sealair Casement Windows are adaptable to any type of building design or construction and are made in non-ferrous alloys assuring minimum upkeep and maintenance cost for the life of the building.

Sealair windows can be obtained in either aluminum or bronze alloy and in any combination of inswinging, outswinging, hinged, pivoted, or projected type sash. The sash members are strongly **welded** together and the frames are tongued, peened and welded. Patented double metal to felt weathering in addition to one metal to metal contact all around the sash assures minimum air infiltration as illustrated by Engineer's report below. This weathering also serves to make the window dustproof and rattleproof in addition to weatherproof.

The Hardware is sturdily constructed to perform the duties required of it and presents a pleasing appearance as well. An extension hinge is supplied where outswinging side hung sash cannot be handily cleaned from the interior. See page 9.

★ LIGHT SEALAIR CASEMENT WINDOWS.
Similar to Heavy Sealair, but for general residential use. Standard sizes up to 16x48-in. one light. Write for data.

SEALAIR WINDOW LABORATORY-TESTED FOR INFILTRATION



Test on Sealair Casement

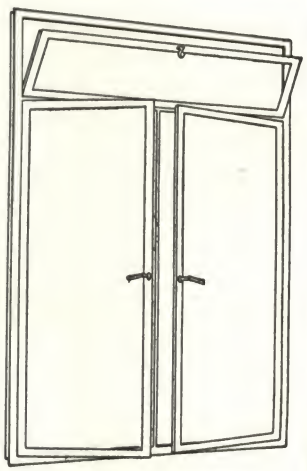
OUR INFILTRATION IS ONE-EIGHTH OF THE AMOUNT ALLOWED BY GOVERNMENT SPECIFICATIONS

Infiltration tests of a Sealair in-swinging Casement window were recently made by the Robert W. Hunt Company, Engineers, at their Chicago laboratories. Ample proof of the efficiency of Sealair 3-point contact weathering is found in the following excerpt from their report:

"In one test the outside was subjected to air pressure, which tended to open the transom and doors. Another test was made with the window reversed, the air pressure being on the inside.

The first test showed, at a pressure equivalent to 25 miles per hour, that the air infiltration was 3.24 cubic feet per minute total, or approximately 0.124 cubic foot per minute per lineal foot of weather-stripping.

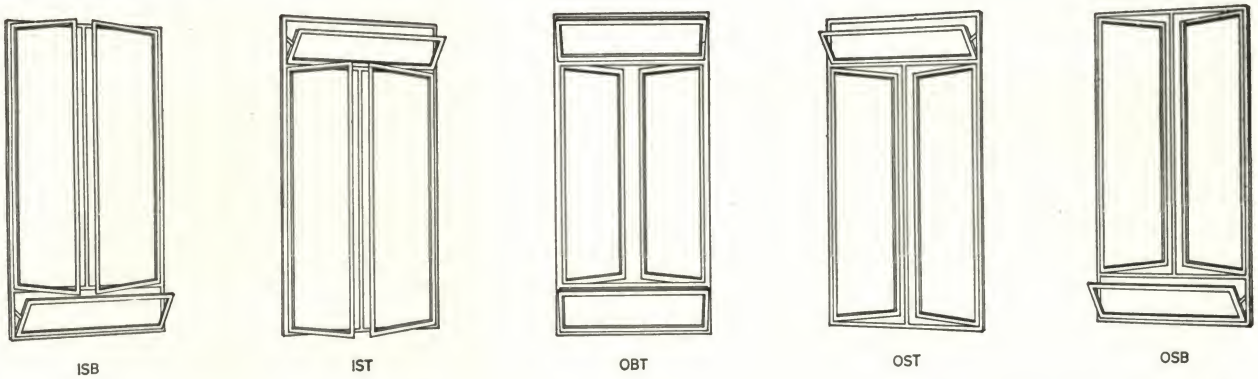
The second test with window reversed showed 2.88 cubic feet per minute total, or approximately 0.111 cubic foot per minute per lineal foot of weather-stripping."

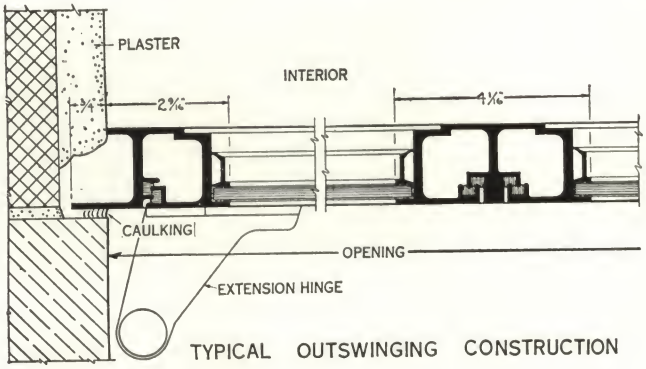


1ST
In-swinging Casement
Size 33⅝ in. x 54⅞ in.
Total length of weather-stripping 312 in. (26 ft.)

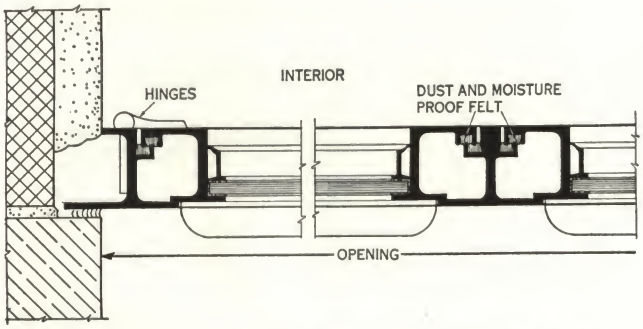
Type of Window Tested

HEAVY SEALAIR CASEMENT WINDOW DETAILS

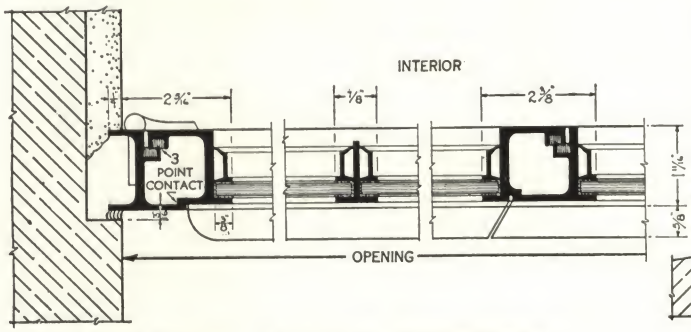




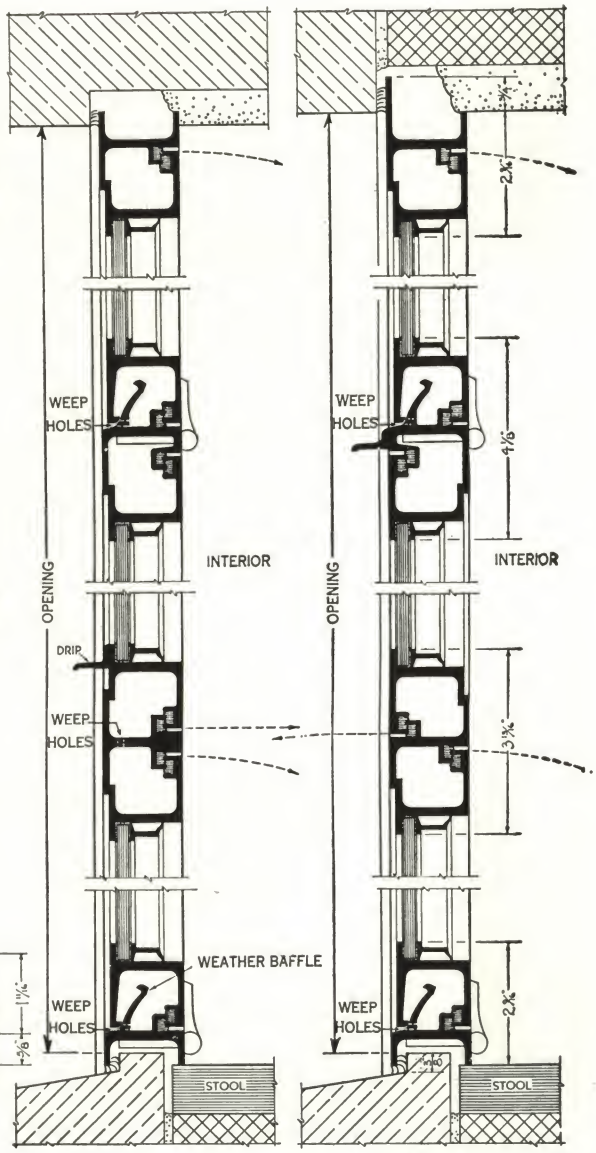
TYPICAL OUTSWINGING CONSTRUCTION



TYPICAL INSWINGING CONSTRUCTION



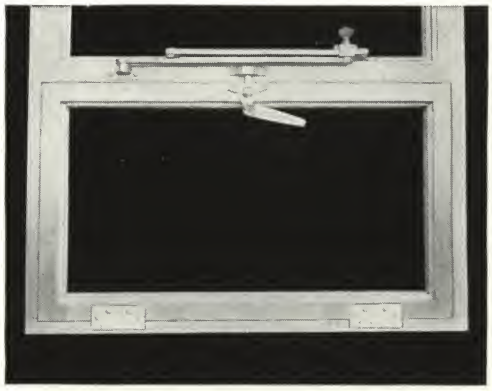
TYPICAL INSWINGING CONSTRUCTION



TYPICAL VERTICAL SECTIONS

Kawneer

TYPICAL SEALAIR HARDWARE

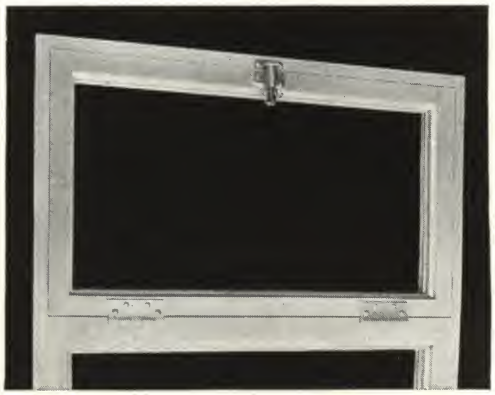


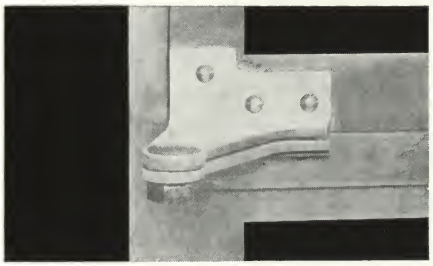
LEFT

Partial elevation of casement showing positive stay adjustor and lower sash with regular hinges, handle and strike

RIGHT

Partial elevation of casement showing transom with regular hinges and transom catch

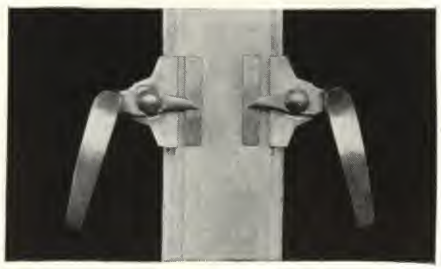




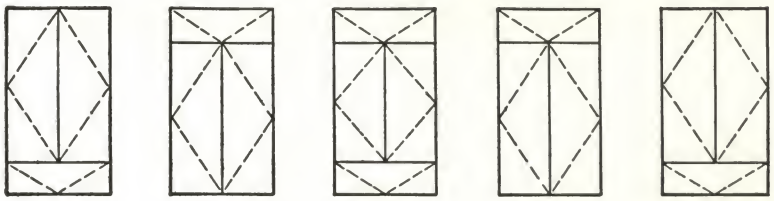
LEFT
Extension Hinge

RIGHT
Outswinging Casement Handles and Strikes

All Hardware Can Be Furnished in Satin or Polish Finish as Desired



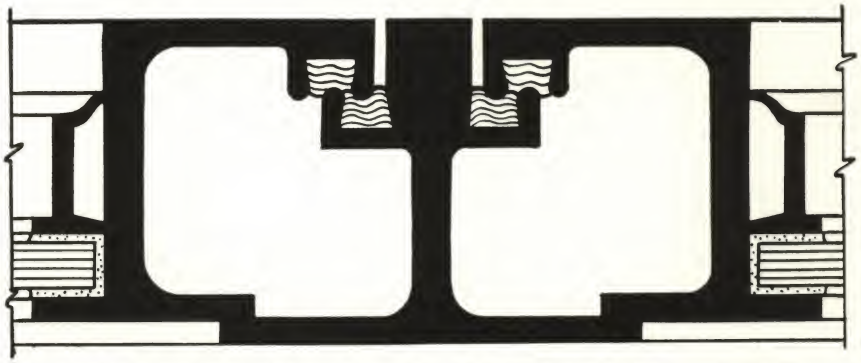
HEAVY SEALAIR CASEMENT WINDOWS



ISB IST OBT OST OSB

STANDARD TYPES

Sizes Optional Within Reasonable Economic Limits

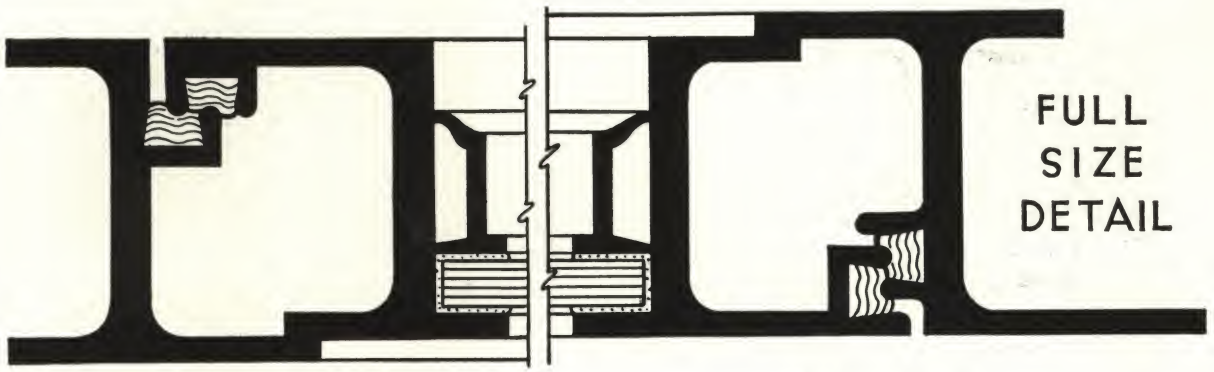


FULL SIZE MULLION IN-SWINGING TYPE

Out-swinging Type Similar

HEAVY SEALAIR CASEMENT WINDOWS

TYPICAL DETAIL OF SIDE JAMB SECTION



In-swinging Out-swinging

Specifications

● **CASEMENT WINDOWS** shall be Kawneer Heavy Sealair Casement Windows as made by The Kawneer Co., Niles, Mich.

● **MATERIALS**—The bronze or aluminum metal used shall be of standard commercial alloys and the best obtainable for the purpose. All members shall be solid extruded sections with all faces, sections and arrises true and in alignment so designed as to give the same masonry and sight lines. Glass shall be in the same vertical plane within the tolerance of $\frac{1}{16}$".

● **CONSTRUCTION**—Sections forming the frames shall be accurately coped or mitered at the corners and intersections; then welded solid along the entire line of contact, or milled to a hair line joint, tenoned, riveted and welded on the unexposed side. Corner joints of ventilator frames shall be accurately mitered and welded solid along the entire line of contact. Muntin intersections shall be securely interlocked, coped or mitered on the face and tenoned or riveted. Surplus metal at welds shall be dressed smooth on exposed and contact surfaces. Windows with sub-frames shall be fastened thereto every 24 inches with aluminum screws concealed when the sash are closed. Windows without sub-frames shall be set in prepared wall opening with water-tight bearings at sills and at least $\frac{5}{8}$" overlap against returns.

● **WEATHERING**—Windows shall be weatherproof, dustproof and rattleproof. Hinges shall provide a continuous three-point contact. There shall be at least two metal to felt contacts all around the sash. When both of these contacts are provided on one side (outside or inside) there shall be a positive metal to metal contact at least $\frac{3}{16}$" wide all around the opposite side. Felt shall be all wool, especially prepared to give maximum resiliency and treated to prevent deterioration due to vermin, moisture or exposure. Felt shall be at least ¼" felt in cross section and protected against distortion or displacement by dovetailed grooves in the section. The contacts shall be so designed that interlocking action occurs before contact is established between the metal and felt. A metal drip bar shall be attached on the outside of the lower rail on all in-swinging sash that are top or side hung. Weep holes shall be provided in the horizontal bars between each sash and at the sill of the windows for drainage. A continuous integral weather baffle shall be provided on sills and horizontal bars.

● **GLAZING**—Glazing is not included here. Glazing Contractors shall back putty all glass and block same if necessary. All sash shall be designed to allow glazing from the inside secured with glazing mouldings mitered at the corners and fastened with machine screws.

● **HARDWARE**—Extension hinges shall be used on side-hinged ventilators whenever the exterior face of the glass cannot be completely cleaned from the inside. Single side hinged ventilators shall each have a sill adjuster, two hinges and locking handle with beveled strike or keeper. Ventilators more than 5'0" high shall have three butts or hinges and a locking handle of the double throw type. Where the center of a ventilator is located more than 6'3" from the floor, a double throw locking handle shall be furnished. Hinged transoms and hoppers hung at bottom to open inward shall have spring catch or locking handle and friction side stays. Butts shall be half surface type with five knuckles and fast pins. Butts used on side-hinged ventilators shall be not less than 3½" high; on top or bottom hinged transoms and hoppers, not less than 3". Extension hinges shall be ample strength to permanently support the glazed ventilator without twist or sag. Locking handles shall be of the pivoted lever type. Single-throw locking handles shall lock the ventilator at one point. Double throw locking handles shall have the two locks connected by a bar not less than one-half the height of the ventilator in length. Sill adjusters shall be of the thumb screw or adjustable sliding friction type holding ventilator open at any angle up to 90 degrees.

● **FINISH**—All frames and sash shall have a fine satin finish unless otherwise specified.

● **INSTALLATION**—All windows shall be installed by the manufacturer or under his supervision after the walls are built. Steel angle anchors shall be provided at heads and jambs of frames, anchored to the masonry with machine bolts and expansion sleeves or toggle bolts. They shall be painted or cadmium plated and where used in connection with aluminum they shall be painted a heavy coat of bituminous paint. Windows shall be coated with a protective coating. After installation this protective coating shall be removed and all metal work cleaned as directed. Grouting and caulking are specified under another heading.

Kawneer

★ RUSTLESS METAL DOORS

U. S. Post Office, Cincinnati, Ohio; Samuel Hannaford & Sons, Architects

WELDED TUBULAR DOORS

These doors are fabricated from seamless tubes of solid bronze or aluminum alloy. The corners are welded to provide maximum strength and rigidity. Glazing mouldings are extruded in two types in harmony with the lines of the door and jambs . . . Kawneer Doors are custom-built, single or double acting, in various tube sizes . . . Transom designs can be varied as desired and either Tubular or Flush-Type construction may be used. Jambs are furnished in two types, each with two methods of anchoring . . . Kick Plates may be mounted on the surface or recessed to form panel. Kick Plates, Push Plates, Push Bars, Grilles, Louvers and other accessories are cast or fabricated in careful accordance with the architect's designs . . . Doors are fitted and hung to frame, hardware applied and the complete unit furnished ready to install.

FLUSH-TYPE DOORS

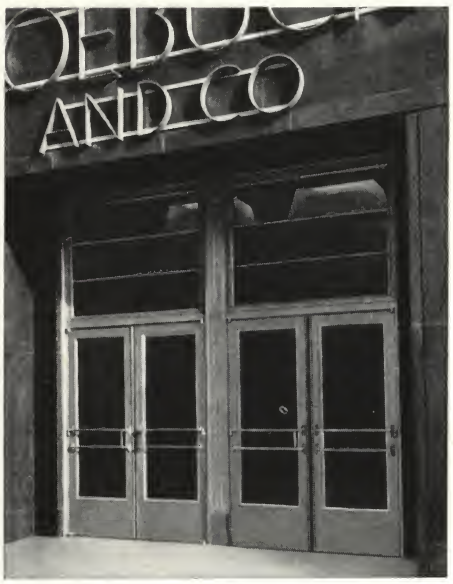
Possibilities for variation of style and design are many with this versatile construction which has found wide usage in public and institutional buildings . . . These doors can be built in both single and double acting types. Surfaces may be entirely flush or with panels, grilles or louvers . . . Transom designs can be varied as desired and either Tubular or Flush-Type construction may be used, depending upon the design. Jambs are furnished in two types, each with two methods of anchoring as shown . . . Kick Plates may be mounted on the surface or recessed to form panel. These, together with Push Plates, Push Bars, Grilles, Louvers and other accessories are cast or fabricated in careful accordance with the architect's designs . . . Doors are fitted and hung to frame, hardware applied and the complete unit furnished ready to install.

TYPICAL KAWNEER METAL DOORS

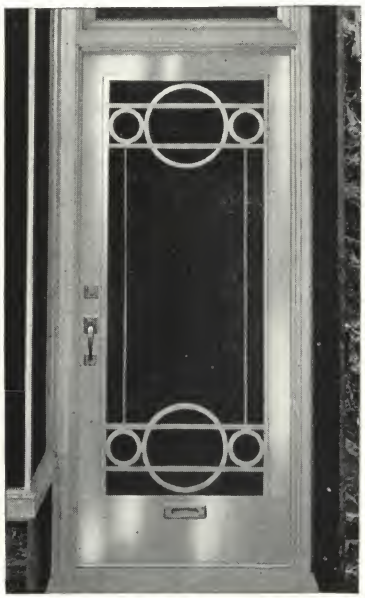
Walden Book Shop, Chicago, Illinois

U. S. Post Office, Norfolk, Virginia; Mitchell, Rudolph, Cooke & VanLeeuwen, Architects

American Trust and Banking Company, Chattanooga, Tennessee



Sears, Roebuck & Company Store, Chicago. Nimmons, Carr & Wright, Architects

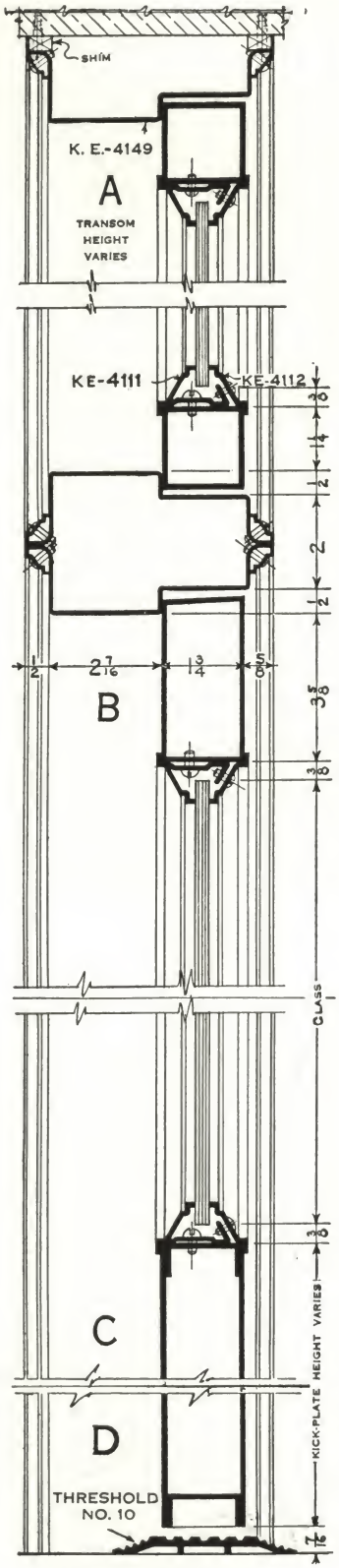


Door for Shop Front on Long Island, N. Y.

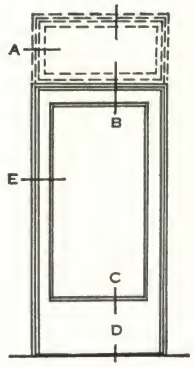
Kawneer

WELDED TUBULAR DOORS

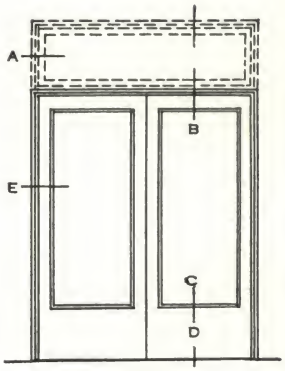
Full Size and 3-inch Scale Details



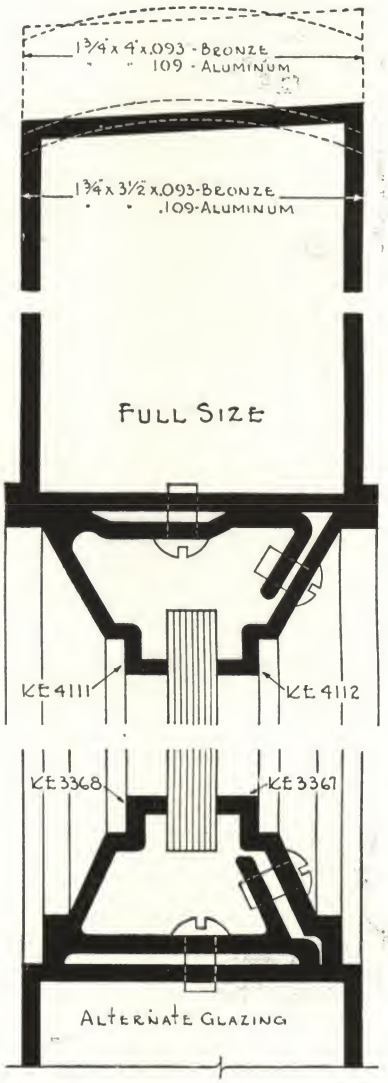
Threshold Design Can Vary

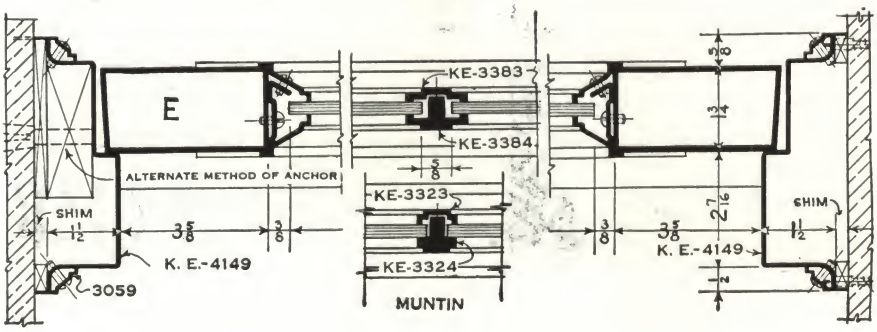


TYPE A
Type B With Transom



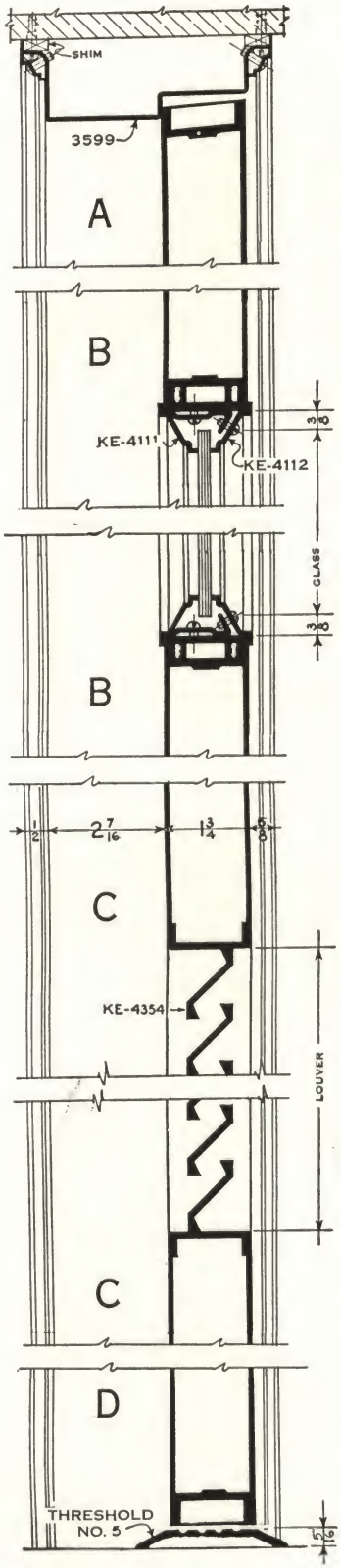
TYPE D
Type C With Transom



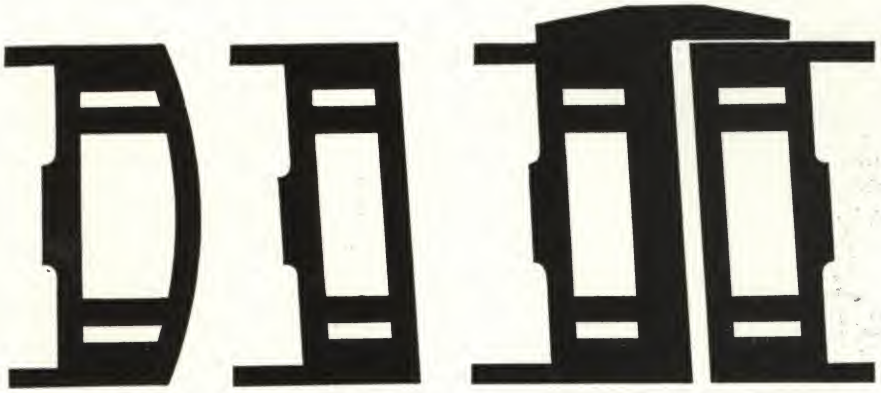


FLUSH-TYPE DOORS

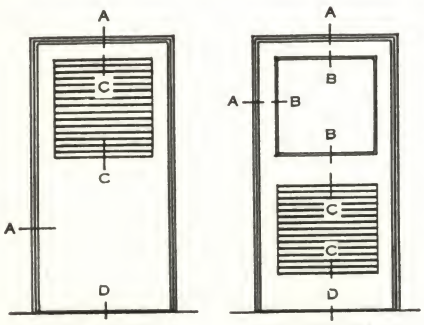
Full Size and 3-inch Scale Details



Threshold Design
Can Vary

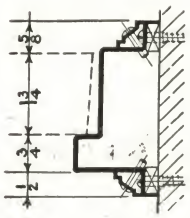


ROUND EDGE BEVEL EDGE ASTRAGAL KE-4120

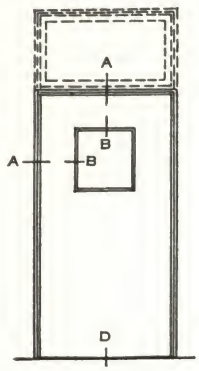


TYPE F2

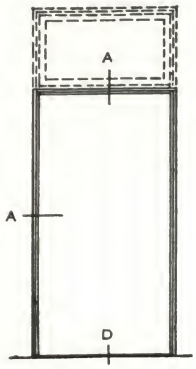
TYPE F1



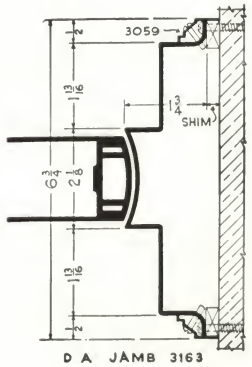
JAMB KE-4114



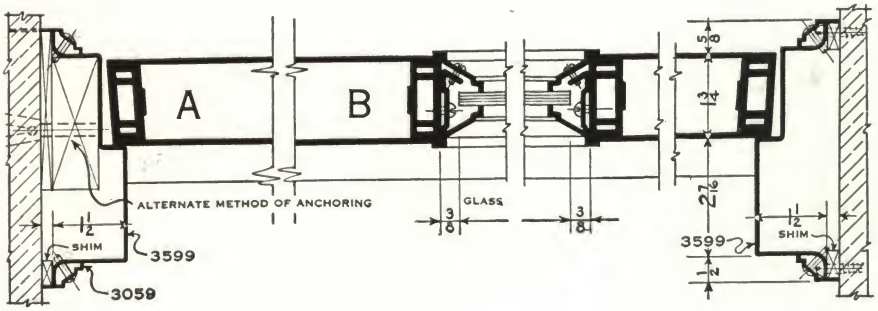
TYPE F3



TYPE F4



D A JAMB 3163



Kawneer

★ ORNAMENTAL METAL

Extruded, Wrought, Cast, Hollow Metal.

THE KAWNEER COMPANY, COLEMAN BRONZE DIVISION, 336 West 37th Street, CHICAGO, ILL.

The Coleman Bronze Division of The Kawneer Company is located in Chicago where it operated for many years as the Adelbert E. Coleman Bronze Company. This plant is extremely well equipped for handling any form of ornamental metal work and operates a large modern foundry and a completely equipped iron shop in addition to its bronze fitting shop.

The combined facilities of The Kawneer Company and the Coleman Bronze Division enable Kawneer to offer expert service on any type of ornamental metal work, whether cast, wrought, extruded or hollow metal.

KAWNEER BRONZE TABLETS AND CASTINGS

RECENT INSTALLATIONS

University of Texas, Austin, Texas (Bronze Windows)
Robert Leon White and Paul P. Cret, Architects

Cermak Pumping Station, Chicago, Illinois (Aluminum Windows & Ornamental Metal)
Bureau of Architecture, Department of Public Works, Architects

United States Post Office and Court House, Columbus, Ohio
Richards, McCarty & Bulford, Architects

Boulder Dam (Cast Aluminum Spandrels & Windows)

University Housing Project, Atlanta, Georgia
Edwards & Sayward, Architects and Robert B. Logan, Associate

United States Post Office, Rochester, New York
Gordon & Kaelber, Architects

William Wrigley, Jr. Memorial, Catalina Island, California
Bennett, Parsons & Frost, Architects

Clay County Court House, Liberty, Missouri
Wight & Wight, Architects

United States Post Office and Court House, Binghamton, New York
Conrad & Cummings, Architects

Mausoleum Temple Beth Israel, Houston, Texas
Joseph Finger, Architect

International Amphitheatre, U. S. Yards, Chicago, Illinois
A. Epstein, Architect and Engineer

Pottawatomie County Court House, Shawnee, Okla.
A. G. Davis & Son, Architects

George Rogers Clark Memorial, Vincennes, Indiana (Tablet)
Bennett, Parsons & Frost, Architects

East Liberty Presbyterian Church, Pittsburgh, Pa. (Bulletin Board)
Cram & Ferguson, Architects

Marshall Field & Company Annex, Chicago, Illinois (Tablets)

Federal Reserve Bank, Philadelphia, Pa.
Paul Philippe Cret, Architect

Post Office Department Building, Washington, D. C.
Delano & Aldrich, Architects

City Hall & Court House, St. Paul, Minn.
Ellerbe & Company, Architects
Holabird & Root, Associate Architects

Indiana Bell Telephone Building, Indianapolis, Indiana
Vonnegut, Bohn & Mueller, Architects

United States Post Office and Custom House, St. Paul, Minn.
Lambert Bassindale, Architect
Holabird & Root, Associate Architects

United States Post Office and Court House, Norfolk, Va.
B. F. Mitchell and Rudolph, Cooke & Van Leeuwen, Associate Architects

United States Post Office, Cincinnati, Ohio
Samuel Hannaford & Sons, Architects

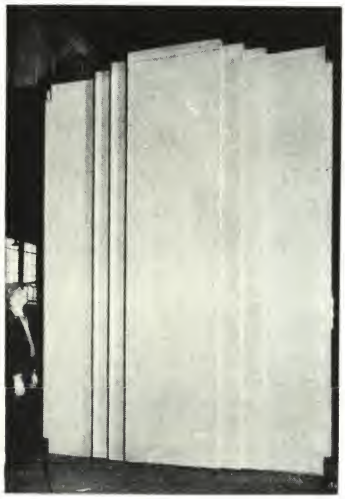
United States Post Office, Hartford, Conn.
Malmfeldt, Adams & Prentice, Architects

TYPICAL KAWNEER ORNAMENTAL METAL WORK

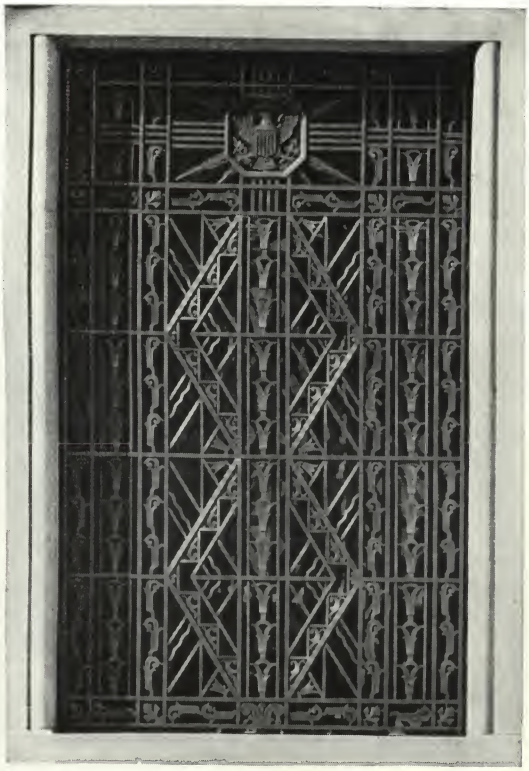
Bronze Gates for Post Office Department Building,
Washington, D. C.
Delano & Aldrich, Architects

Bronze Check Desk, Counter Screens and Railing for Northern Trust Co.,
Chicago, Illinois

Aluminum metal work for Beverly
Theatre, Chicago, Illinois



Cast aluminum spandrel, 13 feet high,
for Boulder Dam



Bronze Grille, United States Post Office, Cincinnati, Ohio
Samuel Hannaford & Sons, Architects

Details below

Kawneer

WINDOWS · DOORS
ARCHITECTURAL
METAL WORK

Mesker
Saint Louis
To build on a foundation of honesty a worthy product — to render a valued service — guided by experience

Since 1879

Since 1879

Mesker Metal Windows

MESKER BROTHERS IRON COMPANY

INDUSTRIAL WINDOWS - SCREENS -
CASEMENT WINDOWS - INDUSTRIAL DOORS

Saint Louis

DISTRICT REPRESENTATIVES IN THE FOLLOWING CITIES:

[For address and telephone number of offices listed below, look in the Classified Directory of your phone book under Sash or Steel Sash or refer to the Alphabetical Section under Mesker Brothers Iron Company *or telegraph the St. Louis Office at our expense.]*

Albert Lea, Minn.
Arlington, Tex.
Atlanta, Ga.
Baltimore, Md.
Birmingham, Ala.
Burlington, Iowa
Cambridge, Mass.
Canton, Ohio
Charlotte, N. C.
Chattanooga, Tenn.
Chicago, Ill.
Cincinnati, Ohio
Cleveland, Ohio
Colon, R. P.
Columbia, S. C.
Columbus, Ind.
Columbus, Ohio
Dallas, Tex.
Davenport, Iowa
Dayton, Ohio
Decatur, Ill.
Denver, Colo.
Des Moines, Iowa
Detroit, Mich.
Duluth, Minn.
El Paso, Tex.
Flint, Mich.
Ft. Wayne, Ind.
Ft. Worth, Tex.
Grand Rapids, Mich.
Great Falls, Mont.
Greenville, S. C.
Honolulu, T. H.
Houston, Tex.
Huntington, W. Va.
Indianapolis, Ind.
Jackson, Miss.
Jacksonville, Fla.
Joplin, Mo.
Kalamazoo, Mich.
Kansas City, Mo.
Knoxville, Tenn.
Lansing, Mich.
Little Rock, Ark.
Los Angeles, Cal.
Louisville, Ky.
Memphis, Tenn.
Miami, Fla.
Milwaukee, Wis.
Minneapolis, Minn.
Mobile, Ala.
Montgomery, Ala.
Nashville, Tenn.
New Orleans, La.
New York, N. Y.
Niagara Falls, N. Y.
North Tonawanda, N. Y.
Ogden, Utah
Oklahoma City, Okla.
Omaha, Neb.
Orange, Tex.
Philadelphia, Pa.
Phoenix, Ariz.
Pittsburgh, Pa.
Portland, Ore.
Portsmouth, Ohio
Rochester, N. Y.
St. Joseph, Mo.
Salina, Kan.
San Angelo, Tex.
San Antonio, Tex.
San Francisco, Cal.
Seattle, Wash.
Shreveport, La.
Sioux Falls, S. D.
South Bend, Ind.
Springfield, Ill.
Tampa, Fla.
Toledo, Ohio
Tulsa, Okla.
Washington, D. C.
Waterloo, Iowa
Wichita, Kan.
Wichita Falls, Tex.
Williamsville, N. Y.

A BRIEF HISTORY

Established in 1879, the MESKER BROTHERS IRON CO. is entering its fifty-seventh year, engaged in the exclusive manufacture of metal window, door and screen products. Starting as a sheet metal firm, by the 1890's it had become the largest manufacturer of iron store fronts in the country. Thousands of these stand today in rural Western cities—a reminder of the early days of "mushroom" towns of the West. Past the turn of the century and up to 1910 the store front boom continued. Then, with a new era of architecture it was swept away as quickly as it had come.

The growing demand for fireproof windows found the answer in the Mesker Hollow Metal Window. But, with the timely development of the Steel Industry, solid rolled steel sections soon gained favor over hollow metal for window construction. From then on each year saw another refinement in Mesker steel sash—each year a new type of window or door—heavier sections of better design—improvement in hardware—the Mesker Cup Pivot—all-welded construction. Throughout the years of advancement, one obstacle yet remained to be overcome. An obstacle which caused great concern among architects and builders everywhere—the irrepressible action of nature to slowly but surely reduce steel back to whence it came—the oxide of iron that we call "rust"!

Mesker Genuine Wrought Iron Casements and Industrial Windows in the Procurement Division of the U. S. Treasury Department, Washington, D. C.

Result—in 1929 the birth of the first Genuine Wrought Iron Window in America—Mesker Wrought Iron Sash. It employed the same wrought iron that has served man's requirements successfully for hundreds of years—the same in physical and chemical properties obtained by the same old process. It utilized the "raincoat" of slag filaments, shedding the water and acting as a barrier to all matter promoting corrosion. As it always has, Genuine Wrought Iron today stands alone, unique among all other ferrous metals. Only Genuine Wrought Iron contains the three essentials for resisting progressive corrosion, essentials that the old-timers never knew, but which modern chemistry and photomicrographs have revealed to us: FIRST, slag content of about 6% by volume. SECOND, purity of base metal "Fe" free from excessive impurities. THIRD, exclusive process of manufacture—puddling below the melting point. Architects and engineers now recognize the value of Genuine Wrought Iron, not as a "cure-all," but as the best corrosion resistant ferrous metal obtainable—a reputation that our forefathers remember.

So today there is nearly three acres of modern factory producing an ever increasing volume of Mesker Steel and Wrought Iron Windows, constantly advancing, developing new products, building faith and goodwill on sound business policy. That in a nut shell is the brief history of Mesker.

MESKER BROS. IRON CO. — ORIGINATORS OF WROUGHT IRON SASH — SWEET'S CATALOGUE

MESKER WINDSOR AND METROPOLITAN CASEMENTS

Mesker Windsor and Metropolitan Casements are made of rolled steel sections designed for casements only. No loose lining or applied weathering bars are used. All sight lines are maintained in Metropolitan, and in both Metropolitan and Windsor only fine casement workmanship prevails. All joints are welded and ground as if one piece. Sections are smooth and straight and a full 1½ in. and 1⅝ in. deep. Ventilators fit with maximum tightness, making positive double point contact. Hardware is Mesker's solid bronze of attractive design and congenial to the grasp. Mesker screens can be applied with ease to any ventilators. Mesker Storm Windows are available on the Windsor.

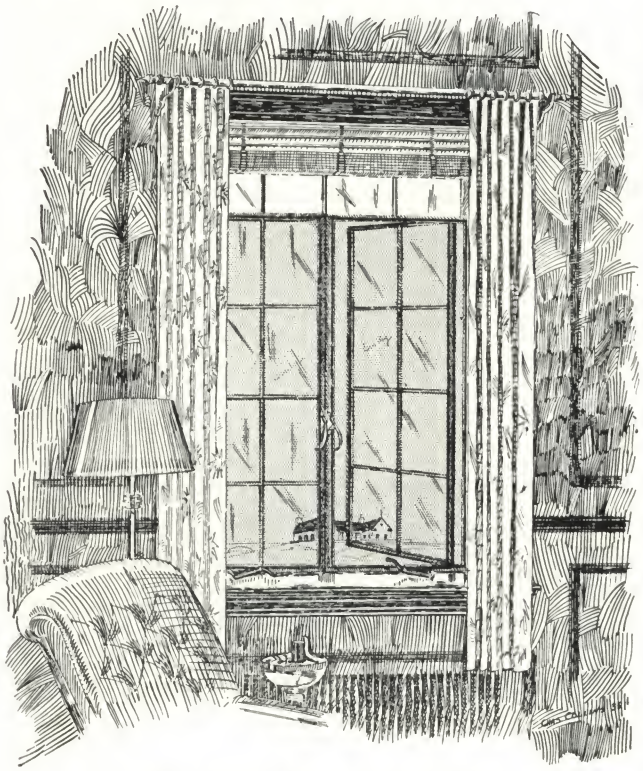
SPECIFICATIONS

(Note: Manufacturers of metal casements have automatically standardized on many features of material and construction methods, realizing that certain standards are essential and inherent in every casement. Such recognized standards have been omitted below as being superfluous. Only essential points of specifications have been included.)

Material—Sections shall be of (hot rolled new billet steel or Genuine Wrought Iron conforming to A.S.T.M. Specifications A-84-33 Grade B-1) . . . weight at least 3.3 lbs. per lineal foot of frame and ventilator bar combined . . . all sections smooth and straight, especially designed for casements only with minimum depth of 1⅝ in. . . . no applied weathering permitted . . . all moving parts bronze or with bronze bearing.

Construction—All joints shall be solidly welded and ground to a smooth finish . . . muntin joints in addition shall be interlocked . . . muntins shall run continuous vertically and horizontally . . . hinges to be of heavy ⅛-in. plate steel, extension type, bronze bearing welded to frame and riveted to ventilator . . . projected ventilators shall be supported by two heavy extension arms and by two adjustable bronze friction shoes sliding in a channel slide . . . sight lines shall be maintained around the perimeter of all casements (and shall be maintained throughout on Metropolitan Casements) . . . where shown and designated casements shall be prepared for screens . . . sections shall be assembled for outside glazing with putty (or inside glazing with continuous beads applied with brass screws spaced on 12-in. centers maximum) . . . head and jamb fins to be furnished bolted to Windsor Casements where designated and shown. . . .

The Mesker Metropolitan Casement



The Mesker Windsor Casement

Hardware—Shall be solid bronze antique coinage finish of plain heavy pattern and rigidly attached to give positive locking . . . it shall be shipped separately, securely packed and wrapped, but shall be first test-fitted to casements in the factory . . . furnish locking handles, strike plates, keepers, pole rings, spring latches, adjusters, and gear operators according to manufacturer's standard practice and required for satisfactory operation on all ventilators, screen and non-screen types . . . all screen type hardware to be designated to operate without the necessity of removing, notching, or distorting the screen in any way . . .

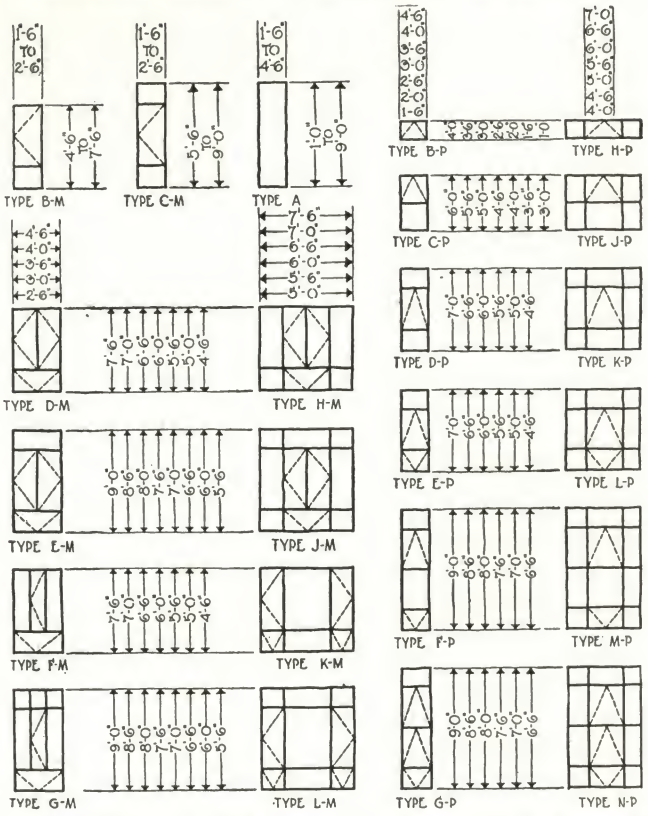
Workmanship—All evidences of good workmanship shall be present . . . sections to be smooth and straight and free from distortion or excessive hammer marks . . . paint to be two coats of quality primer baked on with unbroken smooth finish . . . ventilators to be hung square, operate with maximum ease, and make positive tight contact around entire perimeter . . . muntins to be in perfect alignment, glazing beads as required to be neatly applied coped and mitered . . . all joints shall be flush . . . welds to be ground down and finished off smooth . . .

Erection—All casements to be erected by the manufacturer . . . to be set plumb and true . . . ventilators to be adjusted before glazing and hardware carefully fitted on, leaving all casements in good condition in workmanlike manner . . . manufacturer to furnish sufficient caulking compound and glazing clips . . . (glass and glazing to be included under separate specifications) . . .

Screens—Frame shall be solid steel section ⅜x⅝ in. . . . spline shall be ¼ in. round soft aluminum . . . cloth shall be No. 16 mesh, bronze antique wire . . . frame corners to be solidly welded . . . holes to be punched at each corner for speedy removal of spline to facilitate rewiring . . . cloth shall be stretched tight with no sagging or buckling . . . frames to be given one coat of black enamel baked on . . . all necessary clips and screen fittings to be included . . .

MESKER WINDSOR AND METROPOLITAN CASEMENTS

STANDARD SIZES METROPOLITAN CASEMENTS

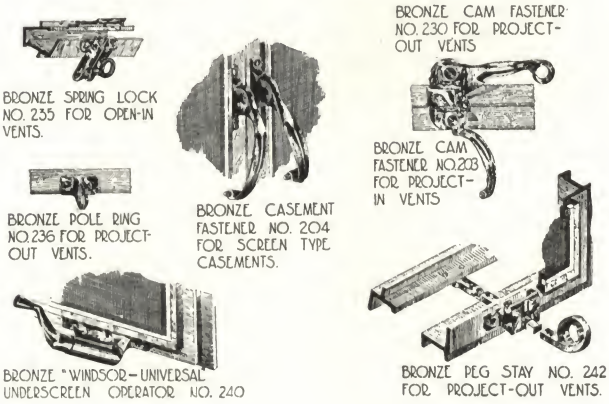


Metropolitan Combination **Metropolitan Projected**

DRAFTING NOTES

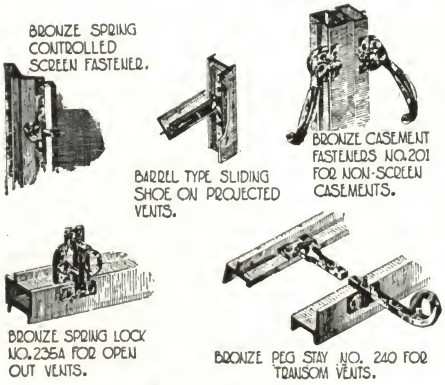
See opposite page for installation details . . . special sizes and designs other than shown are available but following ventilator dimensions must not be exceeded: Side hinged vents maximum width 2 ft. 6 in.; maximum height 6 ft. 0 in. Projected vents maximum width 5 ft. 0 in.; maximum height 4 ft. 0 in., area not to exceed 12½ square feet . . . all casements provided with shade bracket holes on request . . . continuous fins are recommended at head and jambs of Windsor Casements in masonry walls . . . head or jamb fins do not affect opening dimensions . . . muntins may be omitted . . . vents may swing in at extra cost . . . casements must be thoroughly caulked when installed.

MESKER BRONZE HARDWARE

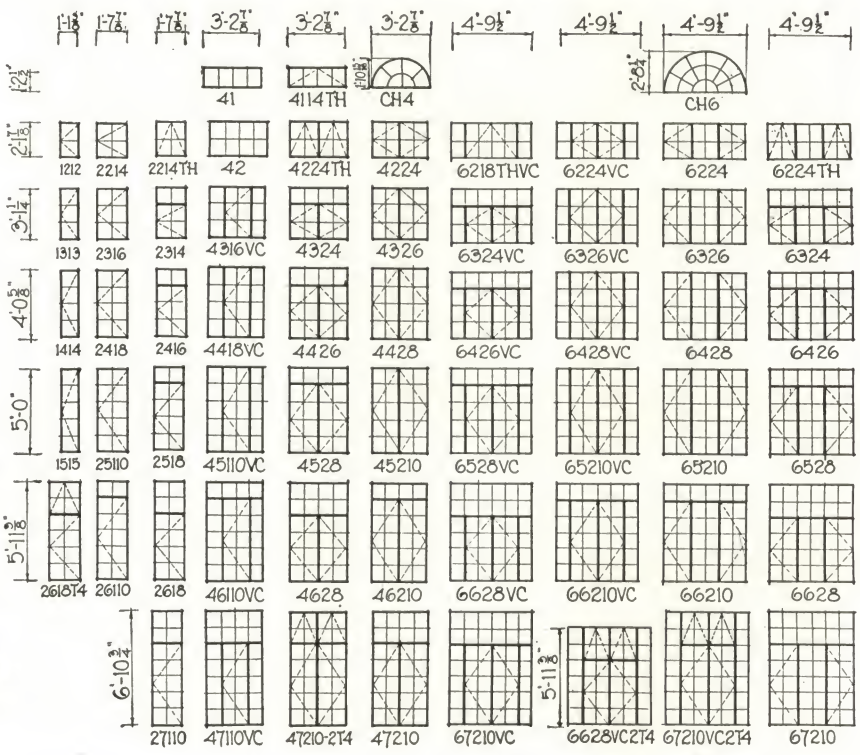


HARDWARE NOTES

Mesker Bronze Hardware is cast in our own factory from our special patterns, using only best quality bronze pig available. Our standard design has been adopted at the insistence of many architects because of its ability to harmonize with all surroundings, and for its shape congenial to the grasp. Architects individual hardware designs can be executed for pattern making cost only, making it possible to obtain your own designed hardware far below the average expense.

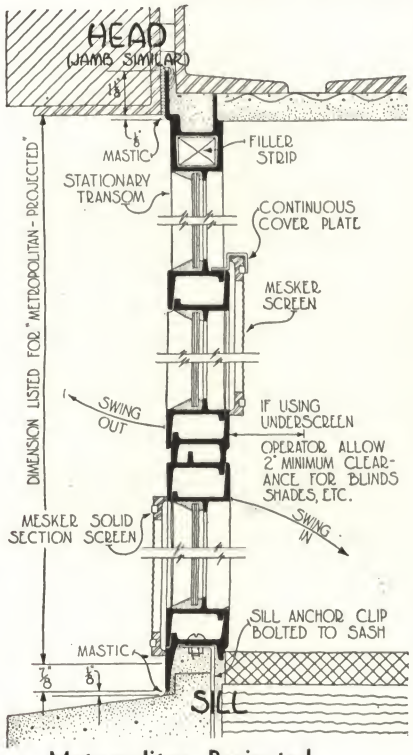


STANDARD SIZES WINDSOR CASEMENTS

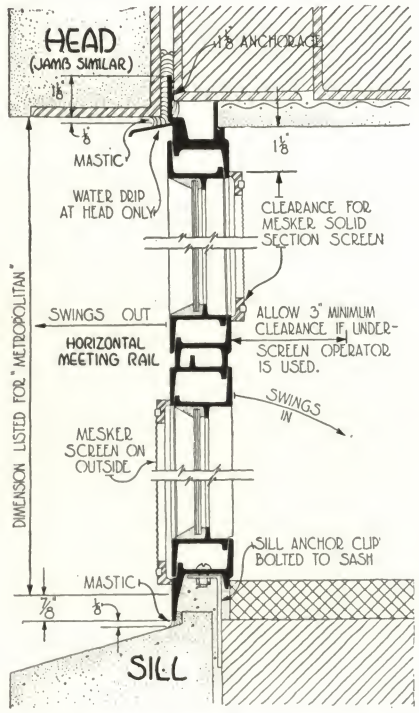


MESKER WINDSOR AND METROPOLITAN CASEMENTS

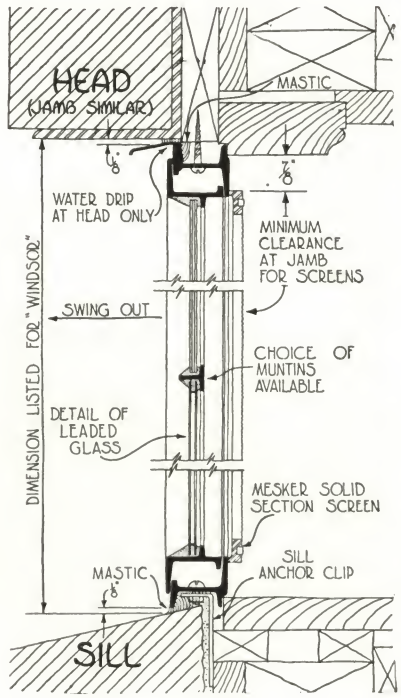
DETAILS ILLUSTRATING INSTALLATION—SCREEN APPLICATION—ASSEMBLY OF SECTIONS—GLAZING



Metropolitan Projected



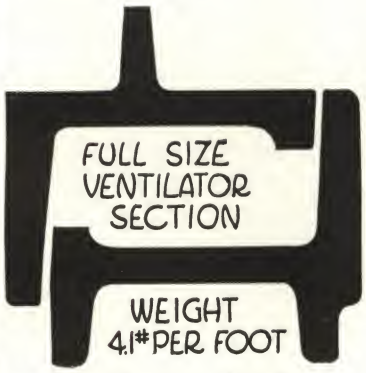
Metropolitan Combination



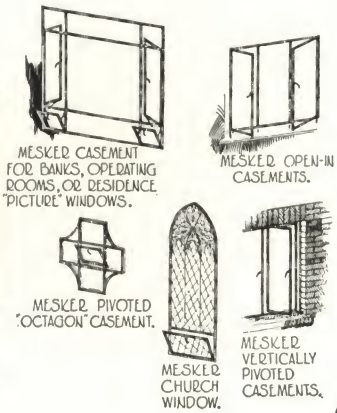
Windsor

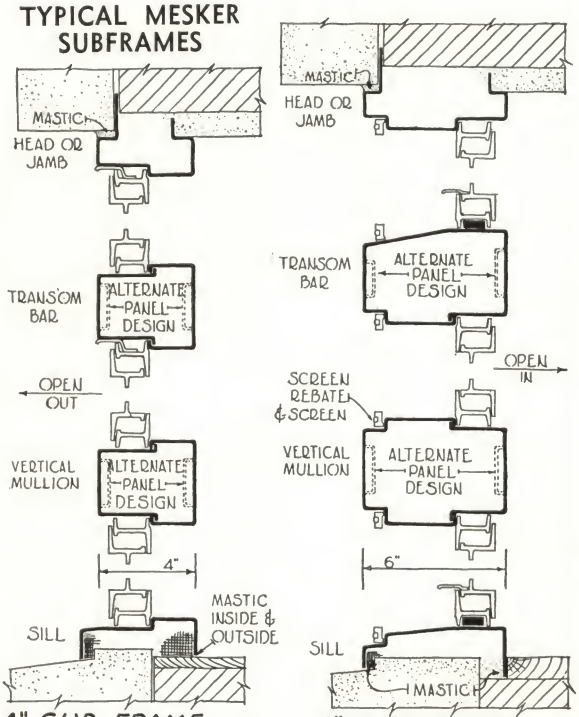
MESKER HEAVY CASEMENTS CUSTOM BUILT

Mesker Custom-Casements are available in practically every size and design conceivable. Vents can be side hinged, bottom hinged, top hinged, horizontally pivoted, vertically pivoted, and projected, all either "in" or "out." They may be inside or outside glazed with clear, plate or leaded glass, using putty or glazing beads. The shapes used in Custom-Casements are similar to shapes used in Mesker Windsor and Metropolitan Casements, except that thickness has been increased to $\frac{3}{16}$ in. and weight is, therefore, greater. Ventilator limits are: Side hinged vents maximum width 3 ft. 0 in.; maximum height 8 ft. 0 in. Projected vents maximum width 5 ft. 0 in.; maximum height 4 ft. 6 in., area not to exceed 16 square feet.



Both Sections 1⅝" Deep



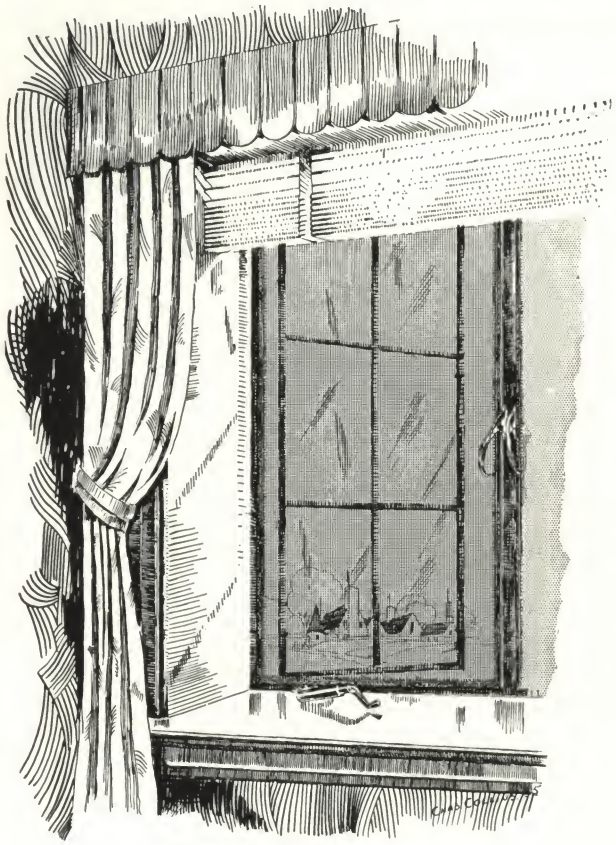


MESKER BROS. IRON CO.

ORIGINATORS OF WROUGHT IRON SASH

SWEET'S CATALOGUE

MESKER GUILDHALL RESIDENCE CASEMENTS



The Guildhall Casement

Mesker Guildhall Residence Casements have been developed for use in medium priced residences where a pleasing yet sturdy casement enhances the architectural beauty. Guildhalls are a product of careful workmanship and embody the best methods of construction known to the Industry. They are weathertight, slim and attractive, and easily draped and shaded.

SPECIFICATIONS

(Note: Manufacturers of metal casements have automatically standardized on many features of material and construction methods, realizing that certain standards are essential and inherent in every casement. Such recognized standards have been omitted below as being superfluous. Only essential points of specifications have been included.)

Materials—Sections shall be of hot rolled new billet steel, weight at least 2 lbs. per lineal foot of frame and ventilator bar combined . . . specially designed for casements only with minimum depth of 1 in. and minimum thickness of ⅛ in. . . .

Construction—Corner joints shall be mitre cut and automatically butt welded . . . muntin joints shall be interlocked and welded, and air hammer riveted where they join the frame . . . hinges to be heavy $\frac{3}{16}$ in. steel plate, extension type, bronze bearing welded to frame and riveted to ventilator . . . casements shall be designed for outside putty glazing . . . where designated casements shall be fully prepared for screens . . . head and jamb fins shall be furnished for all openings where casements set directly into masonry . . . wood surrounds of clear kiln dried Redwood shall be furnished at head, sill and jambs of openings so designated . . . ventilators shall be hung to give double point contact ¼ in. wide around entire perimeter . . .

Hardware—Shall be finished in black lacquer of plain heavy pattern, designed for positive locking . . . it shall be shipped separately, securely packed . . . Mesker Universal Operators shall be furnished in duotone black lacquer housing with solid antique bronze handle for screen type casements . . . furnish locking handles, spring catches, transom stays, keepers, and strike plates of approved design as may be required . . . (Mesker Solid Bronze Hardware is also available) . . . all screen type hardware to be designed to operate without the necessity of removing, disturbing, notching, or distorting the screen in any way . . .

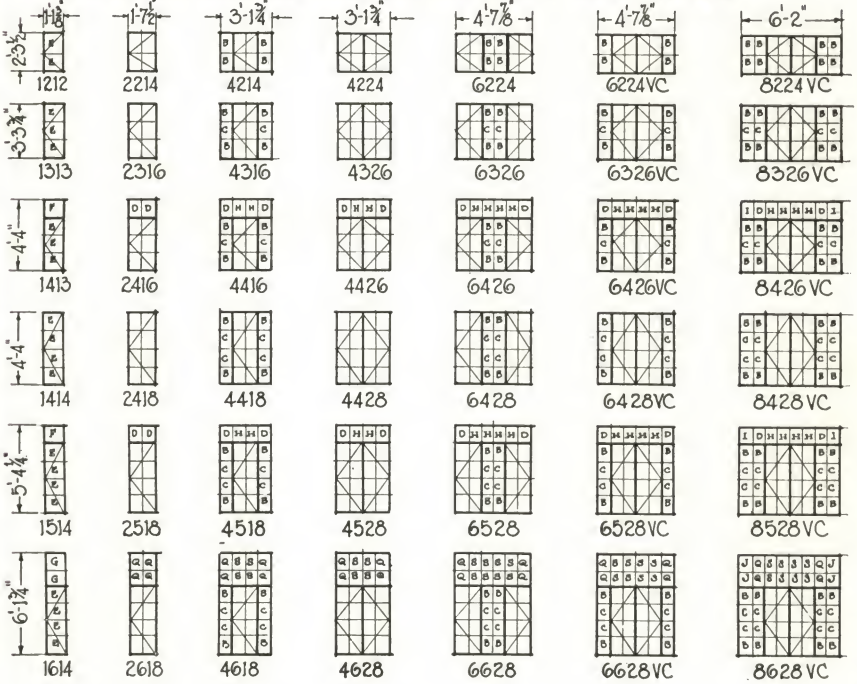
Workmanship—Sections shall be straight, smooth, and free from excessive hammer marks . . . paint to be one coat of rust resisting primer evenly sprayed on . . . ventilators shall be hung square and true, work with maximum ease and make positive tight contact all around . . . muntins shall be in perfect alignment . . . all joints shall be flush . . . welds to be ground down and finished smooth . . .

Erection—(See page 3 for erection specifications.)

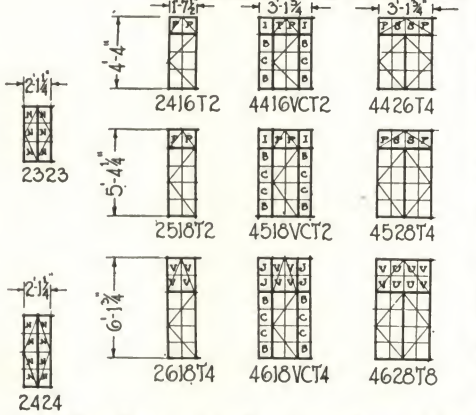
Screens—(See page 3 for specifications on Mesker Screens.)

POPULAR STANDARD SIZES OF GUILDHALL CASEMENTS

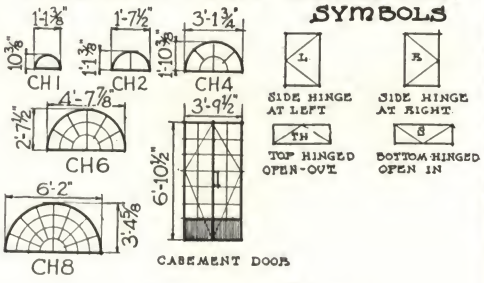
WINDOWS WITH SIDE HINGED, SWING OUT VENTILATORS



TRANSOM TYPE WINDOWS



CASEMENT DOOR VENTILATOR SYMBOLS



MESKER GUILDHALL RESIDENCE CASEMENTS

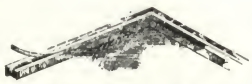
MESKER BRONZE AND LACQUERED HARDWARE

CASEMENT FASTENER NO. 304 FOR SCREEN-TYPE OPEN-OUT VENTS.

CASEMENT FASTENER NO. 301 FOR NON-SCREEN OPEN-OUT VENTS.

SCREEN FASTENER SPRING CONTROLLED.

"GUILDHALL-UNIVERSAL" NO. 305-B UNDERSCREEN OPERATOR.



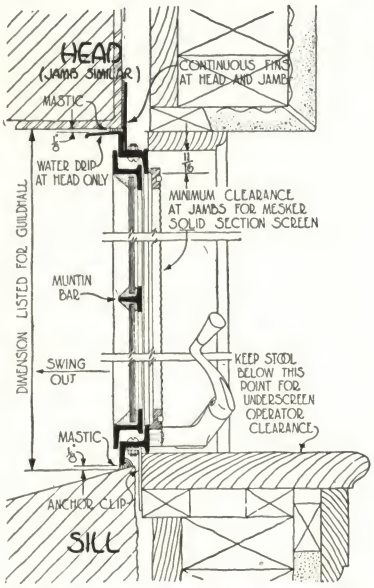
MESKER SOLID SECTION STEEL SCREEN WITH ALUMINUM SPLINE AND ANTIQUE BRONZE CLOTH.

TRANSOM STAY NO. 320 FOR TOP HINGED OPEN-OUT VENTS WITH SCREENS.

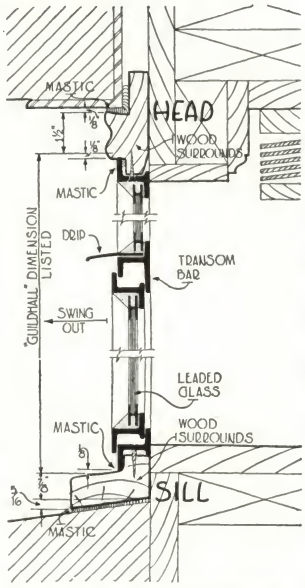
NOTES

Muntins may be omitted from Guildhalls at no extra cost . . . vents may swing right or left . . . when specified holes are provided for shade bracket hardware . . . all hardware designed and manufactured by Mesker . . . drips furnished above all open out vents.

DETAILS SHOWING INSTALLATION — ASSEMBLY OF SECTIONS — APPLICATION OF SCREENS — GLAZING

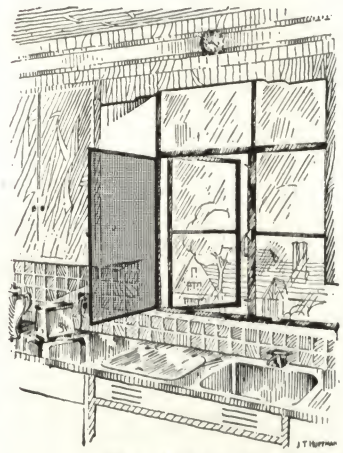


Guildhall Screen Type Casements with Fins in Brick Veneer



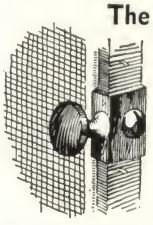
Guildhall Non-Screen Casements with Wood Surrounds in Brick Veneer

MESKER GUILDHALL ENGLISH CASEMENTS

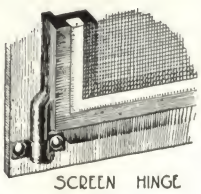


The Guildhall English

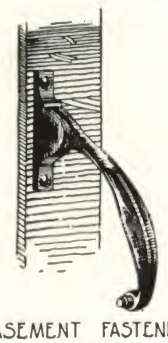
Mesker Guildhall English Casements meet the requirements for a more economical window without sacrificing workmanship or quality. Developed in England, they are designed along the modern trend—no vertical muntins—glass size 16x12 in. The screen, identical to the one used on Guildhalls is hinged to swing in, allowing the casement to be opened out by lifting the locking handle and pushing the ventilator open. A small handle is attached to ventilator as well as screen. Two small spring fasteners hold the screen closed tightly when the window is open or closed. Specifications for Guildhall English are the same as for regular Guildhalls with the exception that hinged screens and 16x12 in. glass size should be noted. Head and jamb fins or wood surrounds may be applied, and installation details are identical to those shown for Guildhall Casements. Standard sizes are as shown below. Hardware is by Mesker and furnished in black lacquer throughout. Casements are glazed on the outside with putty. Lower cost has been made possible by the omission of underscreen hardware and vertical muntins attended by subsequent saving in labor and glazing cost. The same high standard of quality material and exacting workmanship is maintained, however, to keep the Guildhall English a truly fine casement.



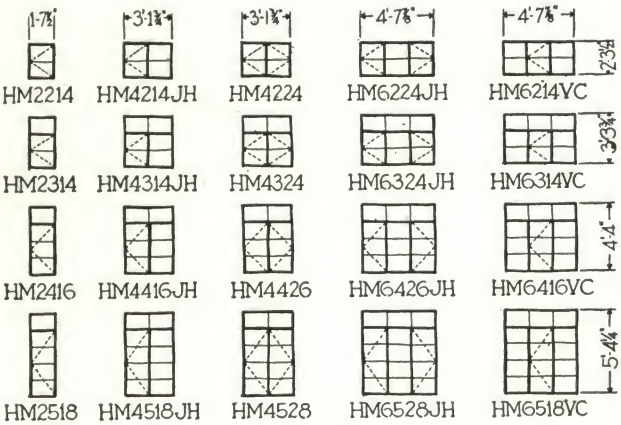
SCREEN HANDLE BUTTON TYPE NO. 352



SCREEN HINGE



CASEMENT FASTENER NO. 350



MESKER H-D PIVOTED AND PROJECTED WINDOWS

Mesker Heavy Duty Pivoted and Projected Windows are acknowledged as being one of the heaviest, strongest, and finest industrial windows on the market. Their many superior features as illustrated below are the result of years of experimentation and careful engineering plus the desire to offer to the architectural profession a factory window void of cheap materials and the usual "stuck together" construction.

SPECIFICATIONS

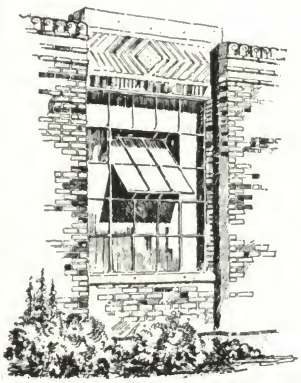
— For Architectural Projected Sash Also —

(Note: Manufacturers of metal windows have automatically standardized on many features of material and construction methods, realizing that certain standards are essential and inherent in every sash. Such recognized standards have been omitted below as being superfluous. Only essential points of specifications have been included.)

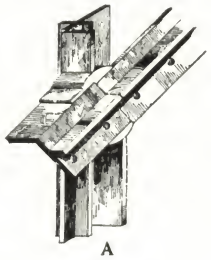
Material—Shall be (hot rolled new billet steel or Genuine Wrought Iron conforming to A.S.T.M. Specifications A-84-33, Grade B-1) in sections not less than 1½ in. deep . . . no section less than ⅛ in. thick shall be used anywhere . . . all moving parts shall be bronze giving "bronze to steel" bearing . . . sections shall be smooth and straight and specially designed for industrial windows . . .

Construction—All joints throughout the sash shall be interlocked or riveted and additionally arc welded . . . applied weathering bars shall be not less than ⅛ in. thick throughout . . . pivoted vents to be balanced on pivots of malleable iron cup and bronze disc design riveted on the center line of ventilator bars . . . projected vents shall be supported by ⅛-in. angle side arms with bronze washers and adjustable friction device, and bronze grooved hinges sliding in the vent jamb . . . muntin bars shall run continuous vertically and horizontally . . . double point contact at least ⅛ in. wide shall be maintained around ventilators . . . mullions of (either T or angle type) shall be furnished where two or more sash occur in one opening . . . glass size shall be (either 12x18 in. or 14x20 in.) . . . putty glazed on (either inside or outside) . . . (for architectural projected sash mention whether outside putty glazing at reduced cost or inside glazing with glazing beads is required, also that unequal leg channel frame bar shall be furnished) . . .

Hardware—Shall be malleable iron (solid bronze antique coinage finish is standard on architectural projected) securely packed for shipment . . . camlocks shall be furnished with all push bars . . . spring latches shall be used on screened pivoted vents, and underscreen push bars on screened projected out vents . . . supply necessary chain, pole rings, chain cleats, chain pulleys, and camhandles for satisfactory operation of all vents . . .

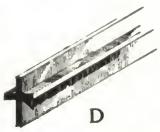


Mesker H-D Pivoted

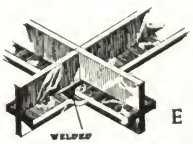


A

B



D



E

Workmanship—All sash to be square and plumb . . . vents to operate easily and to make tight contact with frame . . . muntins to be in alignment throughout . . . all joints to be flush and with clean heavy welds . . . one coat of rust resistant primer paint to be applied in the factory . . .

Erection—All sash to be erected by the manufacturer . . . to be set plumb and true . . . vents to be adjusted and hardware carefully fitted on before glazing . . . manufacturer to furnish sufficient glazing clips and standard erection fittings . . .

Screens—(See page 3 for specifications on Mesker Screens.)

MESKER INDUSTRIAL HARDWARE

CAM LOCK NO. 4 AND PUSH BAR NO. 1 FOR PIVOTED OR PROJECTED~

POLE RING NO. 19 ~ FOR PROJECT-OUT VENTS

KEEPER NO. 22

CAM HANDLE NO. 11 FOR PROJECT-IN VENTS.

UNDERSCREEN PUSH BAR NO. 25

SPRING LATCH NO. 7 FOR PROJECT-IN OR PIVOTED VENTS.

CHAIN PULLEY NO. 7A FOR PROJECT-OUT VENTS

BRONZE FASTENER NO. 10 FOR PROJECT-OUT ARCHT. PROJECTED VENTS.

BRONZE FASTENER NO. 203 FOR PROJECT-IN ARCHT. PROJECTED VENTS.

EXCLUSIVE FEATURES OF MESKER HEAVY DUTY INDUSTRIAL WINDOWS

A. Mesker Cup Pivot (Patent No. 1-882-249) . . . weathertight . . . rust proof . . . large bearing surface . . . provides simple screening and maximum ease of operation for the life of the window . . .

B. Corner Joints Riveted and Welded . . . 2½ in. of solid weld prevents sash from racking out of square . . . maximum rigidity . . .

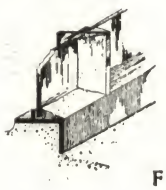
C. Hot rolled weathering angles ⅛ in. thick . . . no light sheet metal sections . . . additional rigidity . . . tighter contact . . . never bent out of shape . . .

D. Deep sections . . . minimum 1½ in., maximum 1⅝ in., depth combats horizontal strains and wind pressure . . . greater depth means greater strength . . .

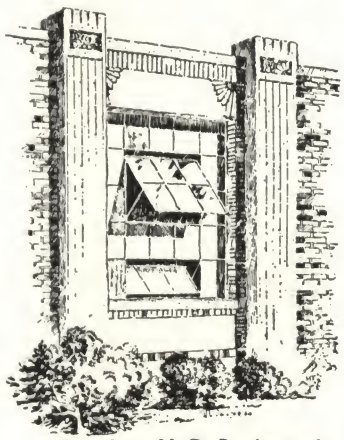
E. Heavy muntin joint interlocked, then thoroughly welded . . . a joint as strong as the bar itself, increasing again the rigidity and strength . . .

F. Outside glazing on industrial sash successfully accomplished . . . putty protects steel, reducing corrosion . . . glazed like all casements and wood sash *on the outside* . . .

C



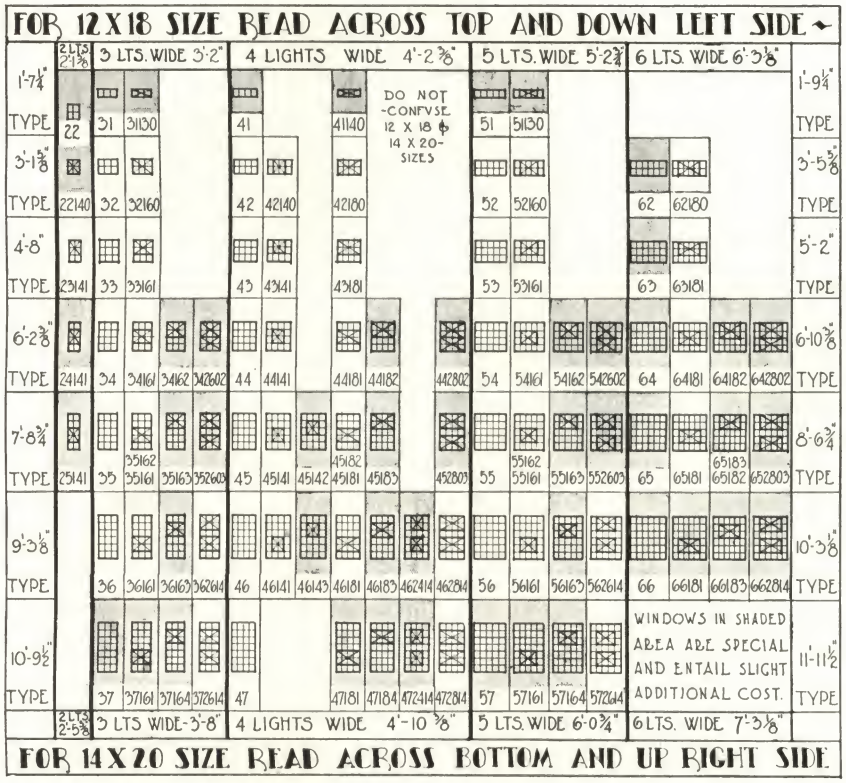
F



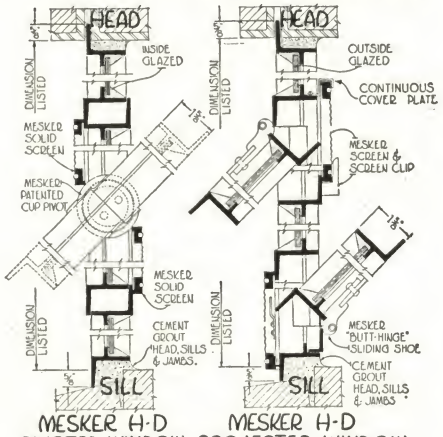
Mesker H-D Projected

MESKER H-D PIVOTED AND PROJECTED WINDOWS

STANDARD SIZES OF MESKER H-D PIVOTED SASH



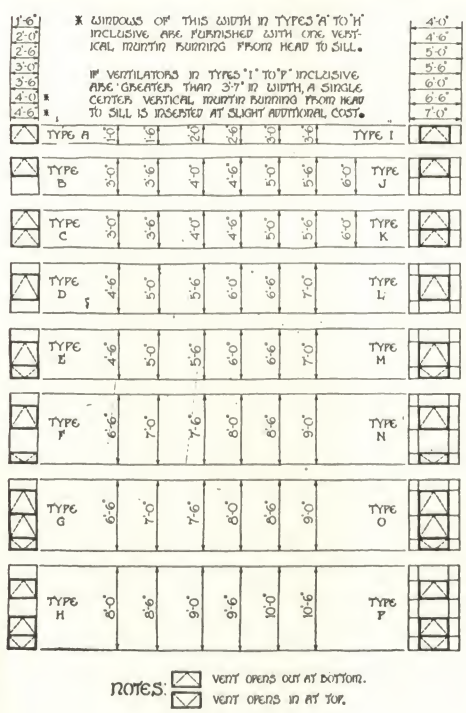
DETAILS SHOWING INSTALLATION —ASSEMBLY OF SECTIONS—APPLICATION OF SCREENS—GLAZING



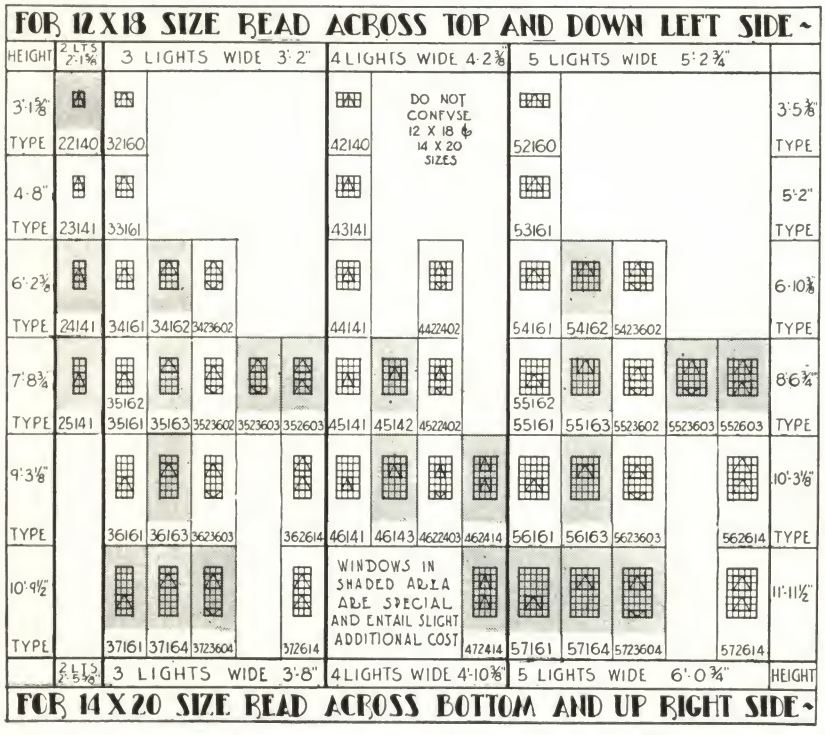
NOTES

Inside or outside glazing is available . . . bronze hardware is available at slight extra cost . . . sash may bear Underwriters' labels . . . each mullion increases opening width two inches . . . vents may also be pivoted at top or bottom . . . ⅝ in. anchorage in walls . . . sash operate without notching or removing screens . . . construction details for Architectural Projected Sash same as for H-D Projected Sash with addition of unequal leg channel type frame section.

STANDARD SIZES OF MESKER ARCHITECTURAL PROJECTED SASH

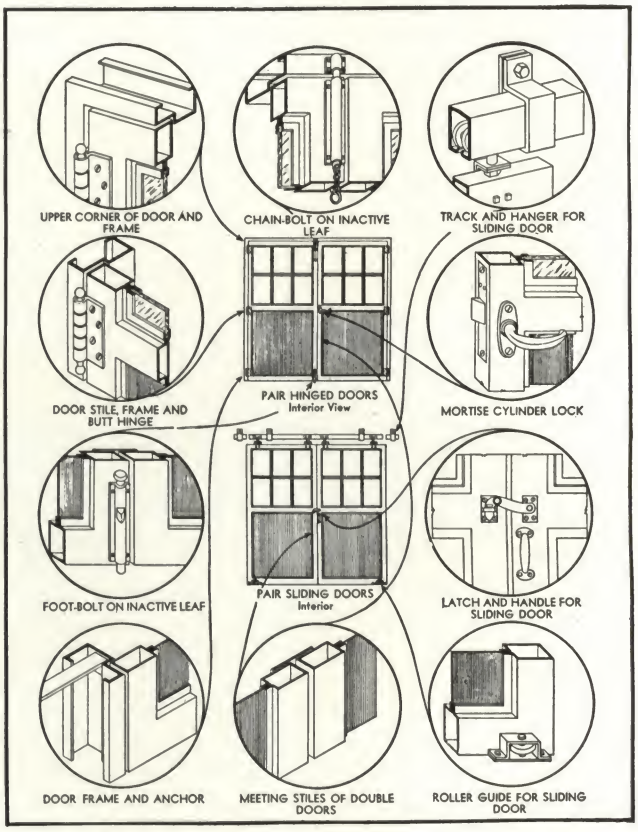


STANDARD SIZES OF MESKER H-D PROJECTED SASH



MESKER INDUSTRIAL STEEL DOORS

Mesker Industrial Steel Doors are made expressly to supply the demand for a door not only fireproof but capable of withstanding hard and rough abuse, yet neat in appearance besides. Heavy rigid construction, all-welded, and heavy hardware make them admirably adopted for general use as interior and exterior doors in all commercial and industrial buildings.



SPECIFICATIONS

Material—Shall be No. 14 gauge blue annealed steel sheets clean and free from scale, for rails, stiles, frames and panels . . .

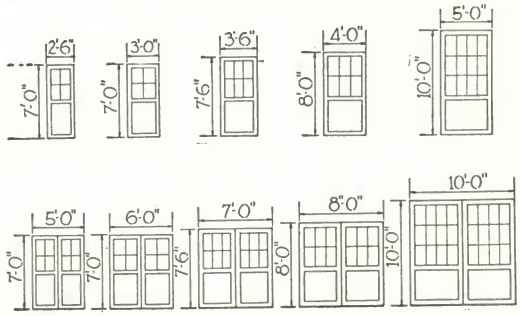
Construction—Stiles and rails shall be of tubular construction 3x1⅝ in. . . . rails shall be mitre cut and solidly welded with heavy corner reinforcements . . . all other joints to be welded and all joints to be ground flush and smooth . . . hinges and other hardware to have concealed reinforcements . . . removable glazing strips to be provided around all panes, attached with steel screws . . . frames to be 4 in. nominal depth with single rebate . . . panels shall be solidly welded to stiles and rails and shall be thoroughly watertight . . steel sheets to be placed so as to give a ¾-in. deep panel on both sides of door.

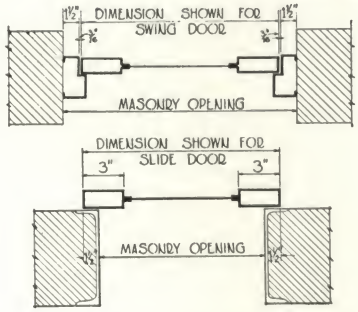
Hardware—Swing doors to have three heavy steel butt hinges and cylinder lock for each active leaf, plus top and bottom bolts for inactive leaf of double doors . . . slide doors to have complete track equipment, hasp and staple handles, floor guides and door stops.

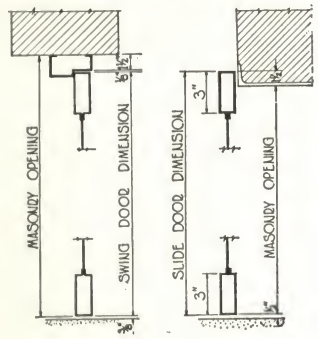
Erection—All frames shall be set as openings are built up and door leaves hung afterward . . . doors shall be originally hung in frames in the factory to insure perfect fit . . .

Notes—Door checks, cylinders, lever latches, antipanic bolts, special hinges, and other hardware are also available . . . all steel panels may be substituted for glass panes in upper part without extra cost . . . thresholds are also available . . .

STANDARD SIZES OF MESKER DOORS







THE MESKER STEEL OVERDOOR

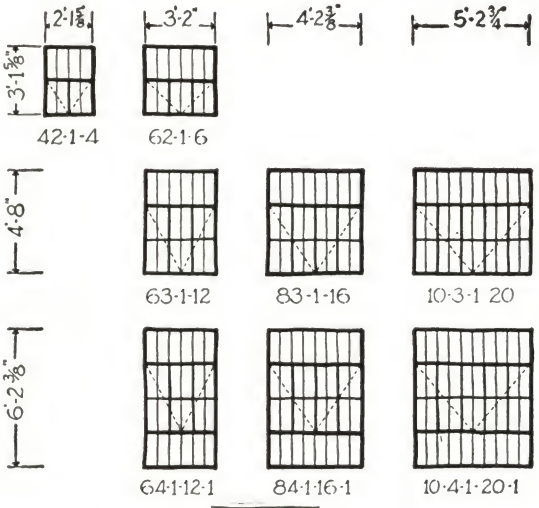
Typical Installation

Mesker Steel Overdoors fill the need for a sturdy overhead door where ease of operation and attractive appearance is a deciding factor. Made of special solid steel sections, the stiles, rails and muntins are exceptionally narrow as illustrated. Glass area is, therefore, at a maximum, letting in the most light. There are no weights or weight boxes nor cumbersome chain pulleys. Two heavy spiral springs placed above the opening raise and lower the largest door almost automatically with minimum effort. Glass is held in place with glazing angles attached with steel screws. Bronze weatherstripping at the head and jambs and a rubber contact roll at the bottom makes this door wind and water tight. Each panel is hinged securely to the next one, and fricionless ball bearing rollers occur at the jambs at each hinge point. All steel panels may be substituted for glass wherever desired. Made in widths from 8 ft. to 15 ft. and heights from 8 ft. to 14 ft. Mesker Overdoors, sliding up and overhead on double tracks, are noted for their slim modern pleasing appearance, freedom from warping, swelling or shrinking, ability to withstand abuse, ease of hand operation even in the largest size, absence of weights and compact hardware assembly and weathertightness. They are admirably adopted for use in filling stations, public and private garages, fire stations, warehouses and truck terminals. Write for full details.

MESKER SECURITY WINDOWS

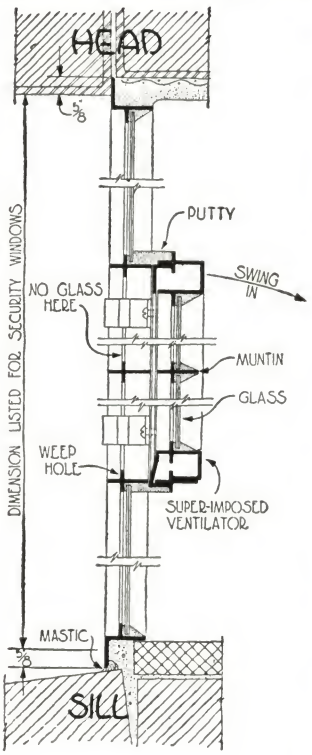
The Mesker Security Window

STANDARD SIZES



A burglar proof window for store buildings, small office buildings, warehouses and any place demanding protection from prowlers and thieves without the expensive necessity of extraneous bar grilles on the outside. Mesker Security Windows are made of the same special sections and to the same high standards as Mesker H-D Projected Windows, and the same exclusive superior Mesker features are contained in both types (see page 8). Security ventilators are of the projected type, and are a separate part of the window super-imposed on the main frame on the inside. When the vent is open the muntins on the frame act as guard bars. The ventilators always project in, and are fastened with a spring catch at the top. The Security Winodow is glazed on the inside with putty.

INSTALLATION AND CONSTRUCTION DETAILS



SPECIFICATIONS

Specifications are the same as for Mesker H-D Projected Windows for material, construction, workmanship, erection and screens (see page 8). Specify additionally that glass size for vent is to be 12x18 in., and for main frame 6x18 in. For hardware, specify spring catch.

MESKER CONTINUOUS WINDOWS

SPECIFICATIONS

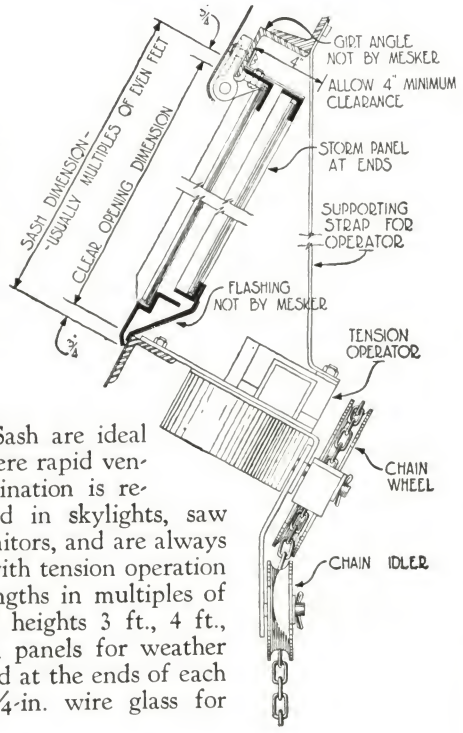
Material—Shall be hot rolled and formed sections of (new billet steel or Genuine Wrought Iron conforming to A.S.T.M. Specifications A-84-33, Grade B-1) . . . ventilator bars to be not less than 1/16 in. thick and mullion and weathering bars to be not less than 1/8 in. thick . . .

Construction—All joints shall be fully welded . . . all sections shall be solid and one piece . . . no built up section shall be permitted . . . muntins shall be 1¼-in. T's spaced on 2 ft. 0 in. on centers and solidly welded to frame . . . hinges shall be of heavy malleable iron bolted to sash every 4 ft., and centered on the muntin . . . sash shall lap the top and bottom girt angles ¾ in. . . . storm panels shall be furnished at ends of each single opening where designated . . . sash shall be glazed on the outside with putty and clips . . .

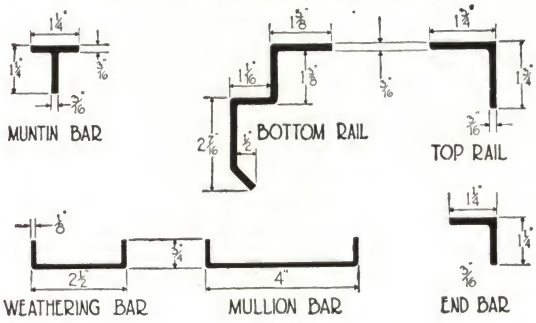
Workmanship—Sash shall be square . . . all joints shall be rigid . . . one coat of rust resisting primer paint shall be applied at the factory . . .

Operators—Shall be tension type chain controlled with cut steel worms, gears and racks . . . all bearings shall be bronze bushed and gears in powers to run in oil in dust proof housings . . . all parts except gears to have prime coat of paint applied at the factory.

CONSTRUCTION DETAILS

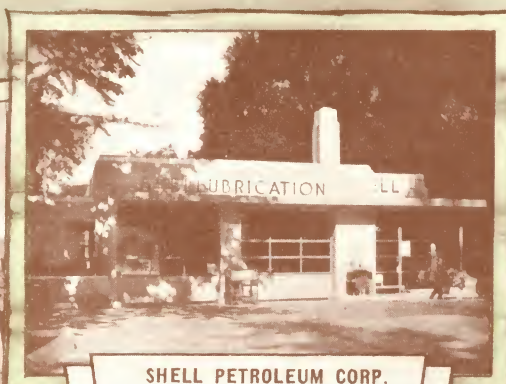


SPECIAL MESKER SECTIONS



Mesker Continuous Sash are ideal for industrial plants where rapid ventilation and mass illumination is required. Can be placed in skylights, saw tooths, side walls or monitors, and are always mechanically operated with tension operation by remote control. Lengths in multiples of 2 ft. up to 100 ft. and heights 3 ft., 4 ft., 5 ft., and 6 ft. Storm panels for weather protection should be used at the ends of each ventilator run. Use ¼-in. wire glass for glazing.

UNITED STATES POST OFFICE
RENO, NEVADA



SHELL PETROLEUM CORP.
TOLEDO, OHIO

BROWN & WILLIAMSON TOBACCO CO.
LOUISVILLE, KENTUCKY

UNITED STATES POST OFFICE
PONCA CITY, OKLAHOMA

RESIDENCE
MOLINE, ILLINOIS

MUNICIPAL BUILDING
PORTSMOUTH, OHIO

TENNESSEE EASTMAN CORP.
KINGSPORT, TENNESSEE

Philadelphia & Reading Coal & Iron Co.
ST. NICHOLAS, PENNSYLVANIA

Mesker

Saint Louis

Among many nationally known customers of Mesker are—International Harvester—Borden's—Kraft Phenix Cheese—Brown & Williamson Tobacco—R. J. Reynolds—Ford Motor—Chevrolet—Swift & Company—Armour—Hormel—Carnegie Steel—Amer. Sheet & Tin Plate—NYC Lines—Pennsylvania R. R.—Premier Pabst—Seagram's—Anheuser-Busch—Standard Oil—Shell Petroleum—Gulf Refining—SKF—Armstrong Cork—Montgomery Ward—Union Tank Car—Elgin Watch—Owens Illinois Glass—Firestone—International Shoe.

CHURCH OF ST. AGNES
ROCKVILLE CENTRE, NEW YORK

CHURCH OF THE SACRED HEART
ABERDEEN, SOUTH DAKOTA

TRUSCON
BUILDING
PRODUCTS

THE COMPANY AND ITS PRODUCTS

THE TRUSCON STEEL COMPANY, of Youngstown, Ohio, is an institution of international scope—the largest company of its kind in the world, manufacturing a complete line of steel building products.

They have been developed in accord with modern architectural requirements for utility and quality, and include individual units peculiarly suited to all types of building and every structural condition.

Due to unusually efficient manufacturing facilities, the profession is assured of dependable workmanship. This, in turn, is supplemented by a nation-wide engineering organization equipped to render direct personal service in the designing room or the field. Our location of offices and warehouses guarantees speedy attention to inquiries.

The TRUSCON STEEL COMPANY of 1935 represents over *"Thirty-two Years of Pioneering and Leadership"* and the following noteworthy line of nationally known building and maintenance products:

Windows, of Steel, Aluminum and Bronze; Steel Doors and Frames; Reinforcing Steel; Steel Joists, Clerespan Joists; Welded Steel Fabric; Metal Lath and Insulmesh for Plaster Bases; Ferroclad Insulation Panels; Steeldeck and Ferrocoustic Roofs; Structural Steel; Unigrid and Teegrid Bridge Floors; Gratings; Safety Tread Steel; Rolled and Formed Sections; Power Transmission Structures; Steel Poles and Towers; Radio Antennas; Steel Buildings; Pressed Steel Specialties; "Silentaire," a Window Ventilator and Muffler; and varied Industrial Maintenance Products.

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ARCHITECTURAL SERVICE

TRUSCON'S designers and engineers work in close relationship with architects, builders and contractors in the interest of a better understanding of all requirements. Architects are invited to call on our Service Department for preliminary estimates, for investigations, studied reports, complete suggestions and definite quotations.

WINDOW AND DOOR SERVICE

Truscon Window and Door Service knows no bias in its recommendations, for Truscon can furnish any type or kind of window or door. And with Truscon's intimate knowledge of latest developments, relative costs, advantages and limitations of standardization and quantity production, it can work efficiently towards its objective—the best interests of the architect and the owner.

ERECTION AND ADJUSTING

The satisfactory operation of a window or door installation is in a large degree dependent upon the manner in which it is installed and adjusted. Realizing this fact, the TRUSCON STEEL COMPANY has built up a national organization of experts familiar with our windows and doors in every detail and ready to take the full responsibility of erecting and adjusting our windows and doors to the satisfaction of the architect, the general contractor and the owner.

Most architects and contractors realize the value of Truscon Erection and specify and award all contracts erected and adjusted. This window and door service means that the TRUSCON STEEL COMPANY and its field organizations take full responsibility for the installation from the start of manufacture up to and including its incorporation in the finished structure.

We look after shipment; unloading at destination; cartage and storage at the job; hoisting and distributing on the various floors; setting, plumbing and fastening in the opening; applying of hardware and the final inspection and adjusting of windows and doors after painting.

SCOPE OF TRUSCON WINDOWS AND DOORS

TRUSCON windows and doors cover a wide range of building requirements and at the same time meet every condition of architectural harmony, simplicity, fine quality and superior craftsmanship demanded by the industry. Truscon offers the following types:

WINDOWS

Double-Hung Windows—(steel, aluminum or bronze). In types and sizes to meet architectural requirements.

Awning Type Windows—Prevent sun glare and drafts; ideal for schools and hospitals.

Casements—A complete line for monumental and public buildings, institutions, apartments and dwellings, including screens and operators for screens, wood surrounds, windows and artistic hardware.

Monumental Projected Windows—For quality installations.

Detention Windows—For prisons, reformatories and psychopathic hospitals.

Architectural and Commercial Projected Windows—A practical window with many applications.

Continuous Windows and Operators.

Pivoted, Utility and Basement Windows.

Silentaire—Mechanical and non-mechanical units.

DOORS

Industrial Doors—For large and small openings.

Overdoors—Operating overhead.

Accordion Doors—Leaves fold against each other like a jack-knife.

Vertical Lift Doors.

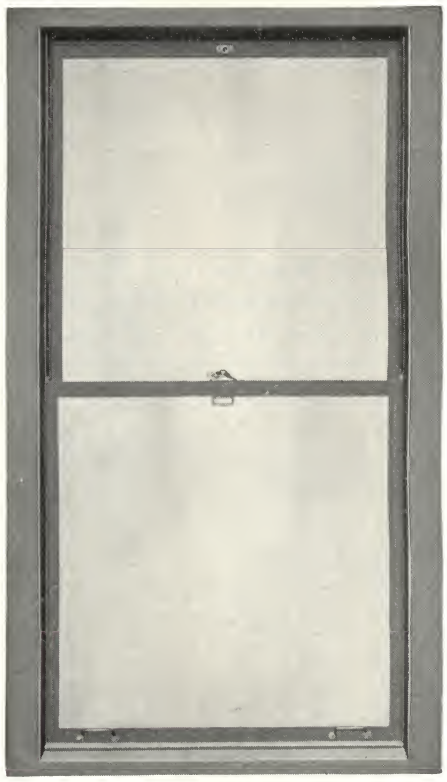
Canopy Doors and Bifold Doors.

Airplane Hangar Doors—In various styles, straight track types, curved track types, canopy, telescoping and projected types.

Pier Doors—A vertical lift-swing type.

DOUBLE-HUNG WINDOWS

MODELS Nos. 27 and 28 Counterweighted



TRUSCON Models 27 and 28, plate type, Double-Hung Windows are galvanized and bronze weatherstripped and meet U. S. Government specifications for salt spray test and air filtration.

Frames are made in one unit and are solidly welded at corners, insuring alignment and ease of operation. Chains are concealed for better appearance, and the entire window has a trim, neat look. Because they are completely fabricated in the factory, field labor is small, and the actual ultimate price compares favorably with that of windows of inferior materials.

Weightless mullions, as detailed on page 6, give narrow slight lines as required in certain architectural designs. In this construction the separate windows are built as an integral unit and all weights are carried at the opening jambs and there are no weights carried in the mullion.

Standard mullions are made of structural "Tees" and straps, and are used to join standard units in the field.

The Model 27 Window is lighter in construction and consequently lower priced than the Model 28 Window.

CONDENSED SPECIFICATIONS

(1) General—All window openings shown on drawings, unless otherwise specified, shall be equipped with solid steel, plate type (galvanized and weather stripped), double-hung windows as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. (Specify herein whether Model No. 27 or No. 28 is required.

(2) Material—All windows throughout shall be constructed of Truscon special hot-rolled new billet steel, galvanized. The gauges of the various sections will be as shown in table:

	Model No. 27	Model No. 28
Sill	14 gauge	12 gauge
Weight box	18 gauge	16 gauge
Cover plates and parting strip	16 gauge	16 gauge
Staff bead	12 gauge	12 gauge
Head and head covers	16 gauge	16 gauge
Rails and stiles of sash	14 gauge	12 gauge
Inside glazing strips at jambs	14 gauge	14 gauge
Top and bottom rails	14 gauge	12 gauge

(3) Scope of Work—The steel window manufacturer shall include in his work all steel Double-Hung Windows erected complete, and shall furnish and apply hardware and weights and make a final adjustment of windows shown on drawings and covered in specifications.

(4) Construction—(a) *Frame Members:* head, sill and jamb construction, each one piece of metal exclusive of parting strip, weight box cover and head cover; all members formed straight and true with welded joints ground smooth; staff bead formed on exterior of frame.

(b) *Pulley Stiles* shall be formed with deep weathering and the pulley stile and weight box cover held in place with one line of oval head screws passing through a heavy reinforcing piece on inside of jamb. Adjustment of sash and frame shall be secured by these screws which hold the pulley stile and weight box cover. The weight box cover shall run the full height of the jamb from sill to head, and shall be removable.

(c) A *brass check* plate shall be attached at meeting rails to insure proper weathering.

(d) A *window stop* shall be provided to prevent air entering room from slot under upper sash.

(e) *Sash Members* shall be so designed that the distance from masonry opening to glass line at jambs and head will be 2½ in.

(f) *Glazing Strips* secured with oval head screws permit inside glazing.

(5) Weather Stripping—Weather stripping shall be provided of spring bronze and applied to sash members at sill, jambs, meeting rails and head. A spring bronze closure shall be applied to lower half of outer sashway.

(6) Hardware—(a) *Frames* shall be equipped with pressed steel pulleys and pressed steel housings with hard steel pins in a brass bushing. Sash shall be hung on No. 130 galvanized steel sash chains concealed behind pulley stiles and properly balanced with cast iron weights.

(b) *Sash* shall be equipped with one pair of lift handles, one combination adjustable sweep lock, one pull-down handle and one pole socket for upper sash, all of solid bronze.

(Cadmium plated malleable iron hardware can be substituted at slight reduction in price.)

(7) Painting—All windows shall be given one coat of protective paint after assembly and before shipment.

CONSTRUCTION DETAILS

(Illustration on Page 5)

(1) Section Through Head of Window—Showing adaptability of head section to any type of construction and positive contact between sash and frame.

(2) Muntin Bars—Furnished horizontally and vertically. They are interlocked and welded at all intersections.

(3) Section Through Jamb—Illustrating the dual function of the jamb frame as weight box and sash guide. A removable weight-pocket-cover-plate extending from sill to head makes the weights easily accessible, and a light metal parting strip between the weights prevents them from becoming twisted or locked together. Proper weathering is secured through spring bronze weather stripping attached to the sash stiles.

(4) Concealed Grout Holes—At each end of the sill, and back of the removable cover plate, make it easy to fill the opening under the sill with grout, thus assuring a firm and weathertight bed for the window.

(5) T-Shaped Mullions—Are used for joining two or more windows in a single opening, and are held in place by means of concealed steel straps which eliminate all unsightly projections.

(6) Pair of Lifting Handles—Are tap-screwed through two thicknesses of metal to the bottom rail of the lower sash.

(7) Section Through Bottom of Window—Showing double contact weathering between sash and sill. The sill section of frame is formed from a single piece of steel, sloped to the outside to insure good drainage.

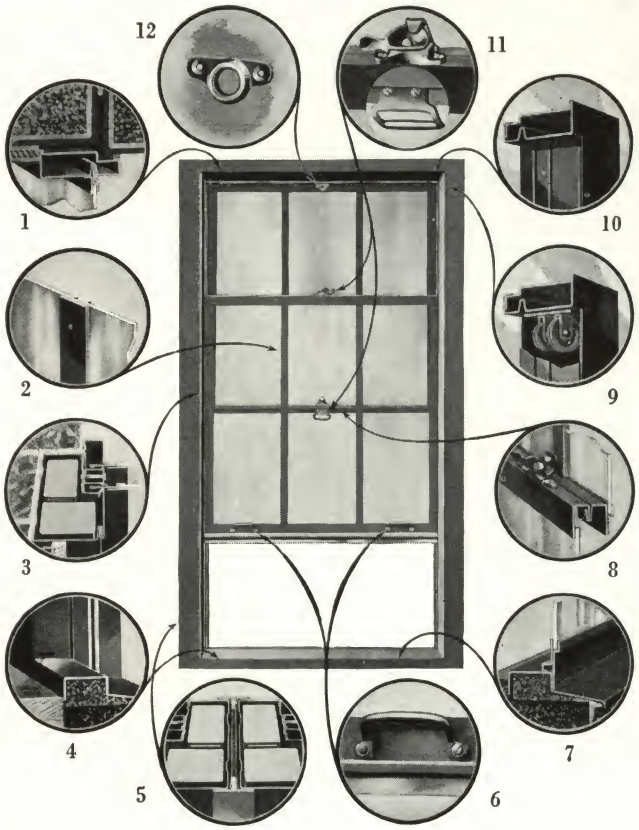
(8) Section Through Meeting Rail—Showing interlocking contact between the upper and lower sash, and the spring bronze weather stripping on upper rail of lower sash. Brass weathering plates are attached to the parting strip at the meeting rail to assure additional weather protection. The bottom rail of upper sash is shaped to act as a drip.

(9) Cutaway View of Jamb Frame—Showing the bronze-bushed pressed steel chain pulleys that turn on hardened steel pins in heavy, pressed steel housings.

(10) Section Through Head of Frame—Showing one-piece channel construction with recess to receive upper sash rail; staff mould formed from two thicknesses of metal and head cover welded to frame section.

(11) Combination Sweep Lock and Pull Down Handle—The sweep lock is adjustable to secure proper contact and locking.

(12) Pole Socket—Attached to the top rail of the upper sash.



WINDOW UNITS WITH TRANSOMS

Transoms are incorporated in the main frame of the standard size Double-Hung Window. They are not a separate unit. All hardware is of standard design and finish. Muntin bars can be furnished in accord with individual specifications.

COUNTERBALANCED WINDOWS

Counterbalanced windows are of the same design as standard Double-Hung Windows, Models Nos. 27 and 28, except that counterweights are omitted and the sash counterbalance each other.

SEGMENTAL OR CURVED HEAD UNITS

Segmental or Curved Head Units can be provided in almost any radii or design. The inside of this window is finished square to facilitate the use of shades and drapes and provides for the practical approach of the sash without interfering with the exterior masonry treatment.

ERECTION AND ADJUSTMENT

Most architects and contractors realize the value of Truscon Erection and specify and award all contracts for double-hung windows erected and adjusted. This service means that Truscon takes full responsibility for the windows from the start of manufacture up to and including their incorporation in the finished structure.

UNDERWRITERS' WINDOWS

All Truscon Standard Double-Hung Steel Windows meet Underwriters' specifications except for limiting unit sizes and glass sizes, and for wide glazing strip stops which are not required for ordinary use.

Underwriters' prescribed limits are:

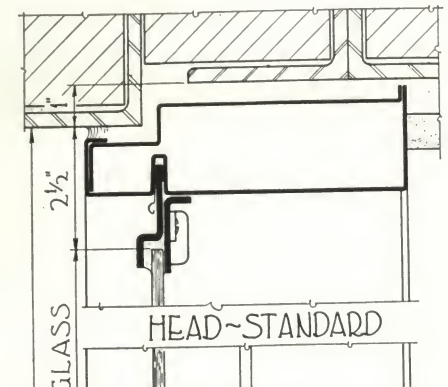
Unit Size: 6′0″ width, 10′0″ height.

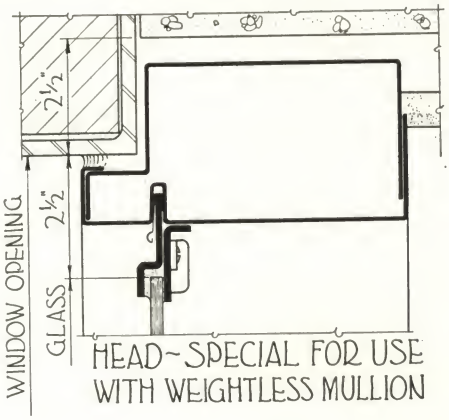
Glass Size: 720 sq. in., exposed area. (Glass not less than ¼″ wire glass.)

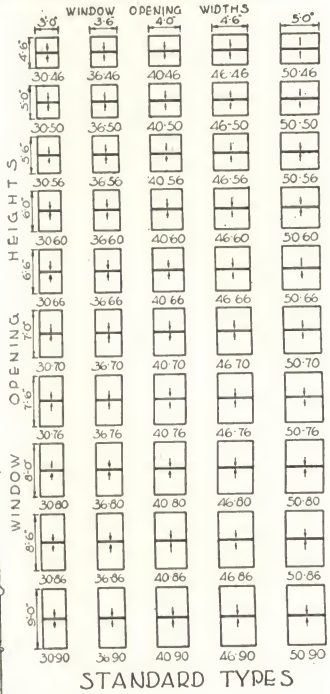
Muntins: $1\frac{9}{16}$″ wide for glass up to 505 sq. in. in area; $1\frac{13}{16}$″ wide for glass over 505 sq. in. to 720 sq. in.

Mullions: Units within limits may be combined with mullions in large bays.

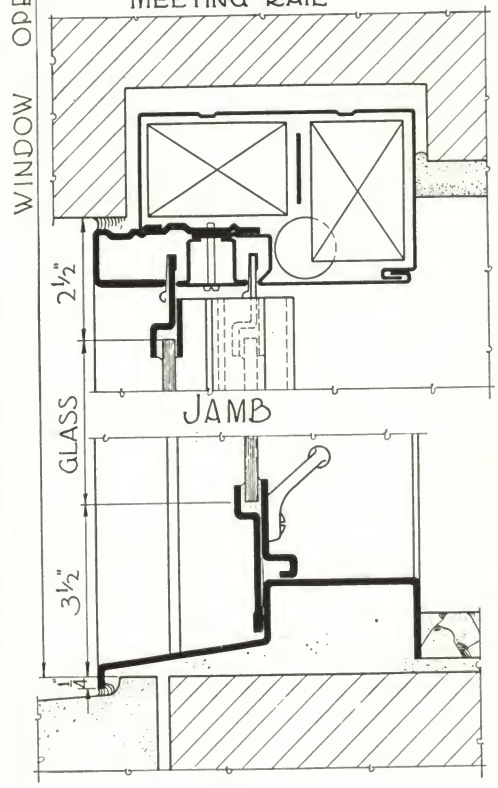
***Note:** Refer to Page 6 for Types and sizes and Standard Details.*

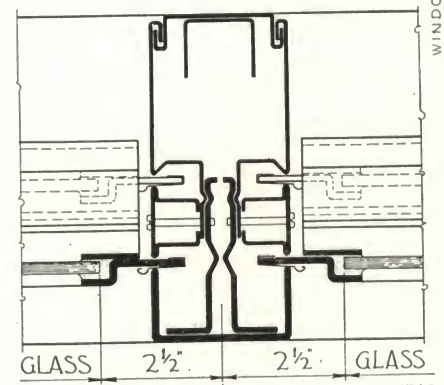






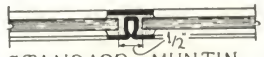
STANDARD TYPES

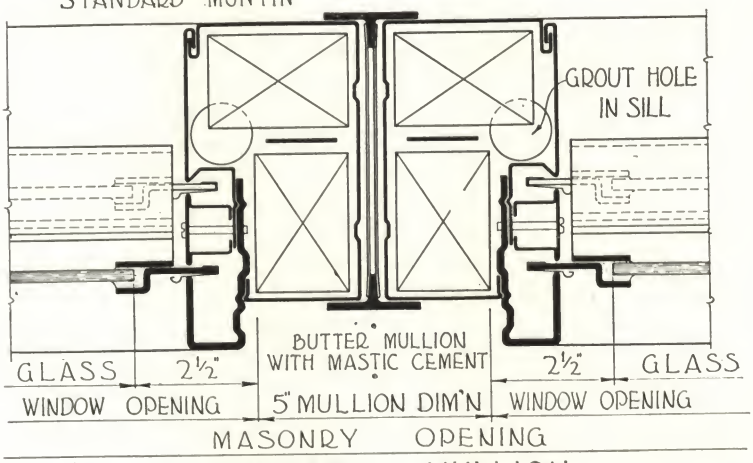




SPECIAL WEIGHTLESS TYPE MULLION

NOTE: WIDTH OF GLASS IN SINGLE LIGHT PLUS 5" GIVES MASONRY OPENING WIDTH.
HEIGHT OF GLASS SUM OF UPPER & LOWER SASH SINGLE LIGHT PLUS 6½" GIVES MASONRY OPENING HEIGHT.
VERTICAL & HORIZONTAL MUNTIN BARS MAY BE USED BUT OVERALL DIMENSION MUST BE MAINTAINED.
DEDUCT ½" FROM GLASS SIZE FOR EACH MUNTIN BAR.
WHEN WEIGHTLESS TYPE MULLIONS ARE USED THE CLEARANCE FOR THE HEAD SECTION IS 2½" IN PLACE OF 1" REQUIRED FOR STANDARD.





STANDARD MULLION

SCALE 3" = 1'-0"

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES — STANDARD DETAILS **DOUBLE-HUNG STEEL WINDOWS** MODEL Nos. 27 and 28	PLATE No. **W-11** OCTOBER, 1935

Note: This Detail Plate Covers Windows Described on Pages 4 and 5

Peerless DOUBLE-HUNG WINDOWS

SERIES 33
Counterweighted

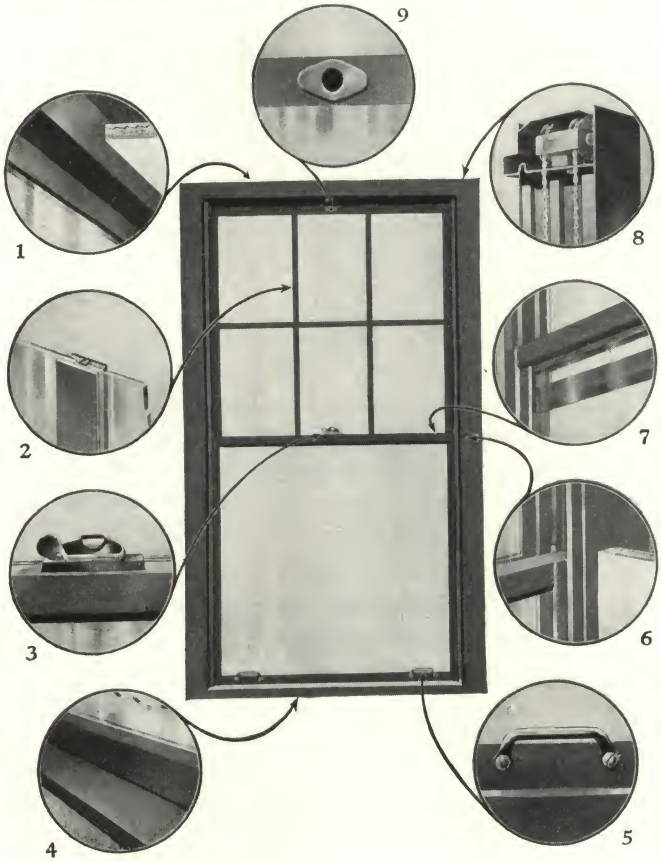
THE Peerless Double-Hung Steel Window, Series 33, combines a pleasing architectural design with maximum utility, durability, simplicity and economy. The tubular construction of the sash, frame members and combination jamb and weight well develops remarkable strength in the sections and at the same time imparts a proportion to them that makes the window thoroughly in harmony with requirements for monumental buildings. Muntins may be supplied, if desired, either for architectural treatment or when Underwriters' label of approval is required.

Positive weathering is provided by flexible spring bronze strips at jambs, head, sill and meeting rail. So accurately and effectively is the Peerless Window constructed that the air infiltration is reduced to a negligible quantity. In every respect, the Peerless Double-Hung Window is as fine as advanced design, quality materials and skilled workmanship can make it. Hardware is thoroughly in keeping with the high standards of the window.

CONSTRUCTION DETAILS
(Illustrated below)

(1) Head—Sturdy tubular construction.

(2) Muntin Bars—Of specially designed sections can be furnished if desired.



(3) Sweep Lock—Solid bronze.

(4) Sill—Made in one piece of steel, sloped to the outside to insure good drainage.

(5) Lift Handles—Solid bronze.

(6) Jamb—Made integral with the weight well; tubular construction imparts great strength.

(7) Meeting Rail—Meeting rail sections are of tubular design formed to interlock; weatherstripping assures minimum air infiltration.

(8) Counterweights—Hung on galvanized chains running over iron pulleys having hard maple bearings, pressure-saturated with paraffin.

(9) Pole Socket—The tubular rail permits it to be recessed.

UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for all standard sizes shown, provided glass lights do not exceed 505 square inches.

Refer to Page 9 for Standard Types and Sizes

FEATURES OF CONSTRUCTION

Tubular Sash Sections—Not only is the appearance of the window greatly improved by the tubular sections of the sash, but remarkable strength is obtained because of their shape. The top rail of the top sash and the bottom rail of the bottom sash are formed of one piece, having a 1⅛ in. depth from front to back and 2⅛ in. height. Both meeting rails are 1¾ in. from front to back by 1⅜ in. high.

Jamb Stops—Removable for easy access to weight box.

Deep, Rigid Sill—Sill is made in one piece, having adequate depth and stiffness to prevent bowing, bending or leakage. All surfaces are flat, with no grooves.

Integral Jamb and Weight Well—The jamb and weight well are made in one piece, tubular in shape, thus eliminating many seams and joints and developing greater strength. The parting and inside stop strips also are formed in one integral piece.

Welded Corners and Frames—No solder, no rivets, no slot-and-tenon construction is used in this window. All corners are coped and lapped to their full depth, then securely welded.

Completely Weather Stripped—Spring bronze weatherstrips are attached to sash at head, meeting rails, jambs and sill. This insures positive weathertightness, eliminates rattle and lowers air infiltration.

Minimum Air Infiltration—The windows are so carefully made that air infiltration has been reduced to not more than one-half cubic foot of air per minute per foot perimeter of sash when subjected to a 25 mile per hour wind velocity.

Quality Hardware—Standard hardware consists of solid bronze lift handles and meeting rail lock and cadmium plated steel pole socket. Malleable iron hardware, cadmium plated, will be furnished, if desired, at a slight reduction in cost. Sash chains ride on grey iron pulleys that have hard white maple bearings, running on $\frac{5}{16}$-in. axles.

Simplified Glazing—In glazing the vents of the window, it is not necessary to remove the sash from the frame.

CONDENSED SPECIFICATIONS

(1) General—All window openings shown on the drawings, unless otherwise specified, shall be equipped with Peerless Double-Hung Steel Windows, Series 33 (Galvanized and weather stripped), as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written consent and approval of the architect.

(2) Scope of Work—The steel window manufacturer shall include in his work all Double-Hung Steel Windows, erected complete, and shall furnish and apply hardware and weights and make a final adjustment of windows shown on drawings and covered in Specifications.

(3) Material—All windows throughout shall be constructed of Truscon Special hot-rolled, new billet steel, copper-bearing and galvanized; Sills shall be of 14-gauge; Jamb Frame (Weight Boxes) and Jamb Stops of 18-gauge; Rails and Stiles of Sash 18-gauge; Inside Glazing Strips of 13-gauge; Sash Stiles, Head Cover Plate, 24-gauge; Head Frame, 16-gauge.

(4) Construction—(a) *Frame Members:* The head frame shall be made up of two parts—the frame proper and the cover. The jamb frame and the weight box shall be made of one piece and shall have attached to it the jamb stop which shall also serve as an access panel to the weights. All members formed straight and true with welded joints.

(b) The *Jamb Stop* shall be removable to afford an exceptionally large opening for access to weights.

(c) *Sash Members:* Sash members shall be not less than 1⅛ in. deep, front to back, and shall be so designed that the distance from masonry opening to glass lines at head will be 2⅝ in. and at jambs 2⅛ in. Corners of sash shall be welded.

(d) The *Meeting Rail* between upper and lower sash shall be formed so as to interlock.

(e) Where *Muntin Bars* are required, they shall butt against sash members and be so welded that wherever possible a flush surface is secured at intersections. A smooth outside and inside surface shall be maintained on all muntin bars.

(f) Convenient *Inside Glazing* shall be assured by the use of removable inside glazing strips at sides only. These glazing strips shall be secured with oval-head screws.

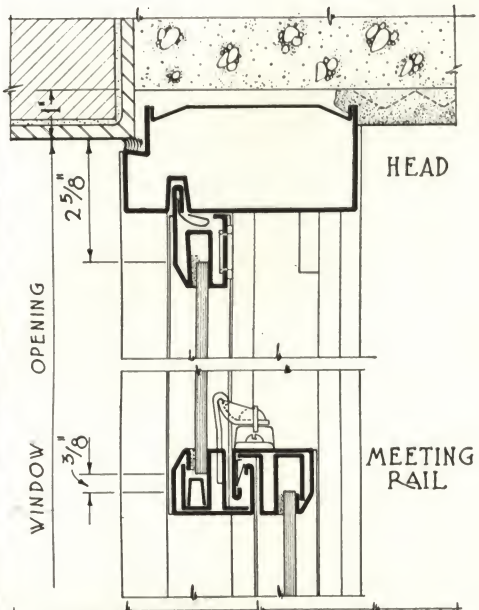
(5) Weather Stripping—Weather stripping shall be provided of spring bronze and applied at sill, jambs, meeting rail and head.

(6) Hardware Equipment—(a) Frames shall be equipped with grey iron pulleys having hard white maple bearings saturated in paraffin under steam pressure and running on $\frac{5}{16}$-in. round, cold-rolled axles mounted in pressed steel housings. Sash shall be hung on No. 130 Galvanized Steel Sash Chains exposed and properly balanced with cast iron weights.

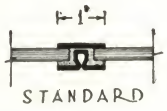
(b) Sash shall be equipped with one pair of solid bronze lift handles, solid bronze sweep lock, cadmium plated steel sweep lock strike, and one cadmium plated steel pole socket.

Note: Special steel or lead weights shall be supplied where cast iron weights are not sufficient to balance sash properly.

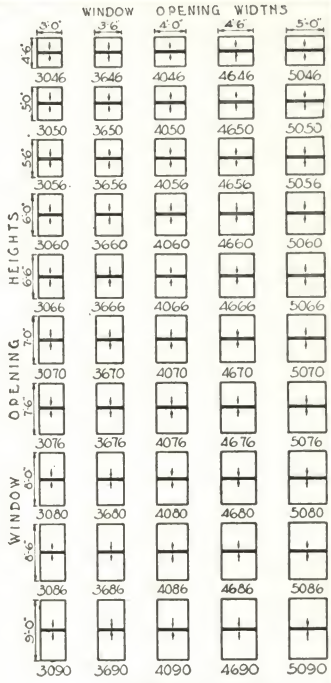
(7) Painting—All windows shall be given one coat of Truscon Protective paint after assembly and before shipment.



TYPICAL SECTION



MUNTIN BAR DETAILS



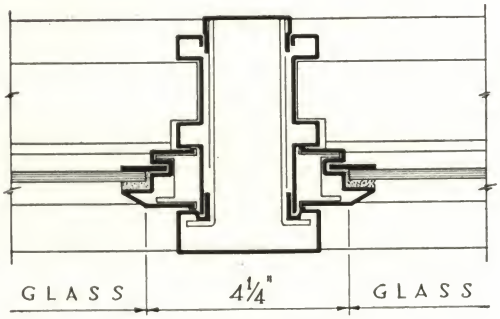
STANDARD TYPES

NOTE: WIDTH OF GLASS IN SINGLE LITE PLUS 4¼" GIVES MASONRY OPENING, ALSO WINDOW WIDTH.

HEIGHT OF GLASS SUM OF UPPER & LOWER SASH SINGLE LITE PLUS 6" GIVES MASONRY OPENING HEIGHT, ALSO WINDOW HEIGHT.

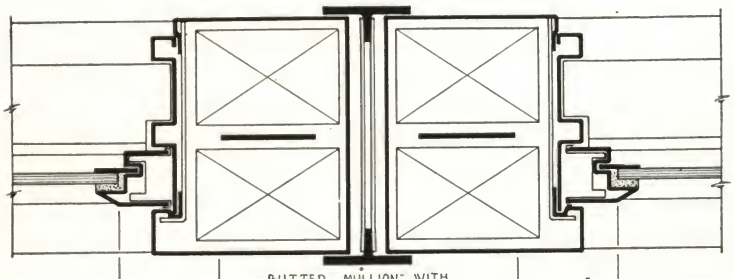
VERTICAL & HORIZONTAL MUNTINS MAY BE USED BUT OVERALL DIMENSION MUST BE MAINTAINED.

DEDUCT ½" FROM GLASS SIZE FOR EACH MUNTIN BAR.



WEIGHTLESS MULLION

WHEN THIS TYPE OF MULLION IS USED THE DOUBLE-HUNG SASH ARE BUILT IN ONE INTEGRAL FRAME.



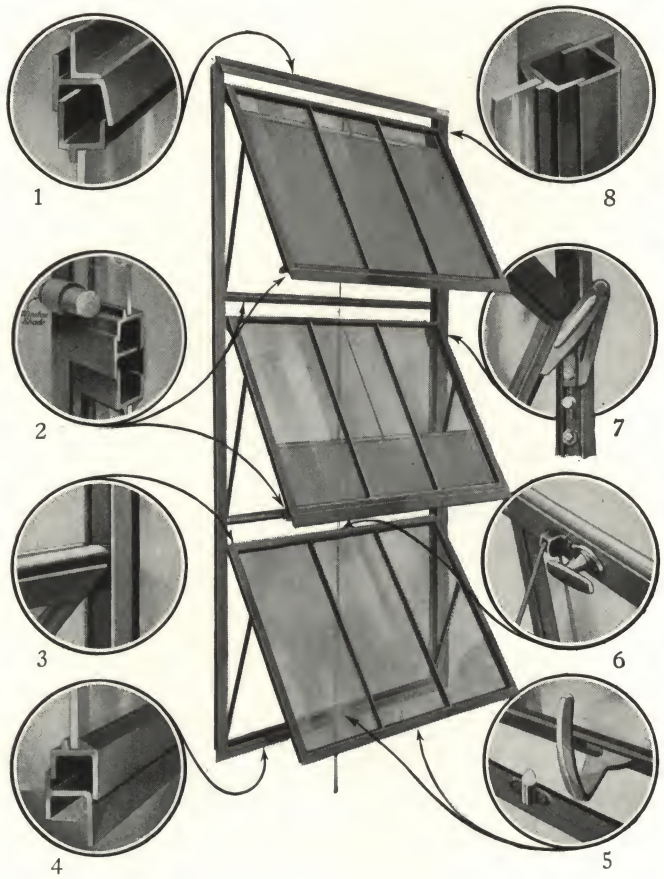
STANDARD MULLION

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES — STANDARD DETAILS *Peerless* DOUBLE-HUNG STEEL WINDOW	PLATE No. WW-9 OCTOBER, 1935

Note: This Detail Plate Covers Windows Described on Pages 7 and 8

DONOVAN AWNING TYPE WINDOWS

MODEL No. 29



DAYLIGHT illumination without sun glare, and natural ventilation without draughts are provided for schools, hospitals, offices, hotels, apartments and public buildings by Donovan Awning Type Windows. They are made of high quality steel and are superior in design, construction, workmanship and operation. Their moderate cost makes them practical for any building.

Simple, substantial and pleasing in appearance, the Donovan Window details have been carefully worked out to make possible the practical application of the latest and best principles of perfect ventilation and correct lighting.

Correct ventilation is assured because all ventilators open in unison and the air is deflected upward into the room. Human inclination to follow least resistance and to open the lower ventilator only of other windows at subsequent loss of ventilation is here stopped. While all ventilators do and should open together under normal weather conditions, for inclement weather the lower ventilators may be opened or closed independently of the upper ventilators by merely disengaging the clutch.

Correct daylight illumination is assured by the arrangement of window-shades. Shades are attached to the bottom rail of each ventilator instead of at the head of the window as is standard practice for other types of windows. The shade rolls *down* when not in use. When ventilators are open and the shades are raised, direct glare is eliminated and light is reflected and diffused throughout the room. Tests show that with this arrangement the side of the room away from the windows is brighter than if no shades were used or if conventional shading were employed.

Donovan Windows are easily cleaned from the inside with safety and economy, and cost no more than common types. Their perfected form is the outcome of long experience, often making possible a saving of from ten to fifteen per cent in building costs by removing the necessity of expensive plenum systems.

Heavy solid bronze finishing hardware is included in the construction of these windows.

CONSTRUCTION DETAILS

(1) The Head Construction—Utilizes a heavy Tee section as a bearing against which the top ventilator makes a contact that is positive and weather-tight. An angle welded to the Tee bar provides an anchorage fin that insures a tight installation at the lintel.

(2) The Meeting Rails—Are Tee sections, which in combination with the drip strip, provide a two-point flat contact bearing for the rails of the ventilators. Note that the shade bracket is placed close to the ventilator to prevent infiltration of light.

(3) The Bottom Ventilator Pivots—Are ruggedly constructed. When the bottom ventilator is released from the others by use of the clutch the pivot pins are retracted and the bottom ventilator is guided by shoes, as shown. Spring pressure snaps the pins back into position for regular operation.

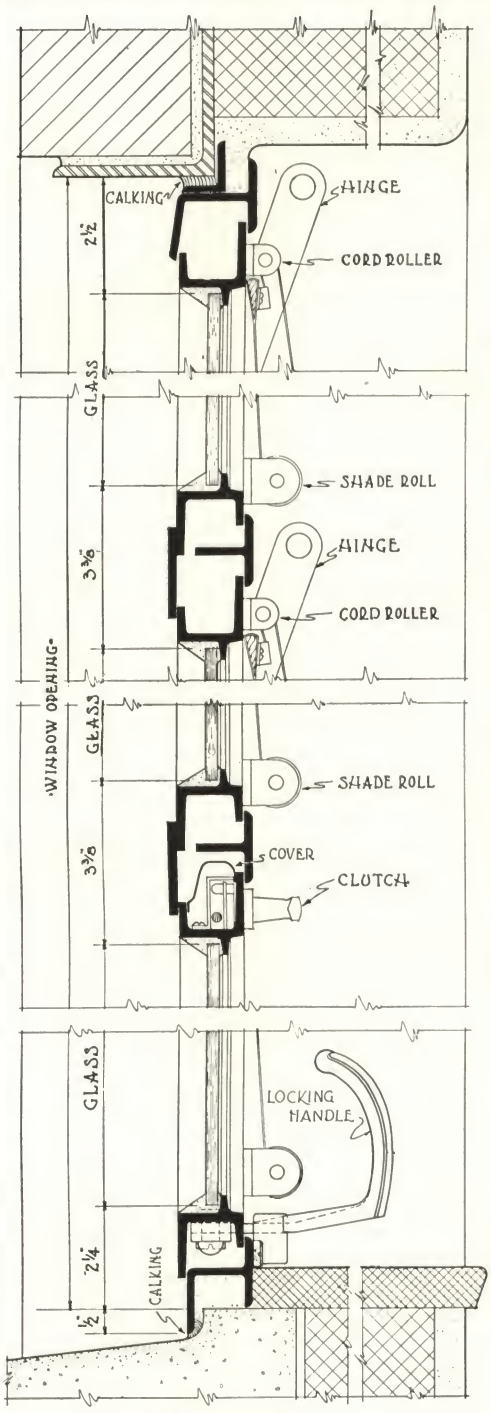
(4) The Sill—Also utilizes two-point flat contact construction to assure weather-tightness, and in addition, the longest leg of the sill member is placed on the outside to make weather-tight contact with the masonry.

(5) The Locking Handle and Strike—Permit the window to be locked by a simple inward pull with locking action. Handle is adjustable. The handle is shaped and placed so that the knuckles of the operator cannot be scraped on the sill. This handle provides complete operation of all superposed vents.

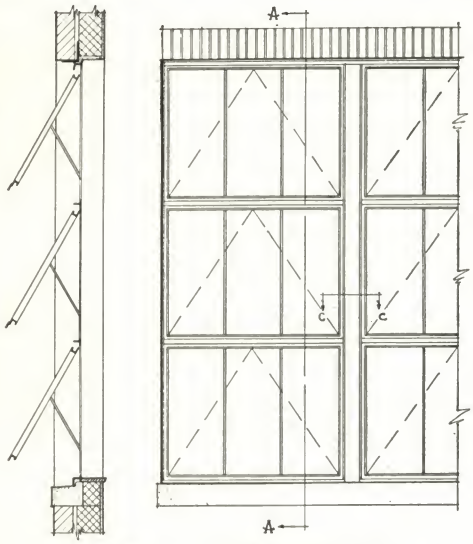
(6) The Releasing Clutch—Disconnects the bottom ventilator from the others, allowing the lower ventilator to be operated independently from the balance of ventilators.

(7) The Upper Ventilator Hinges—Are fastened to the connecting bars by screws and to the ventilators by welds. The tightness of the ventilators can be increased or relieved by moving these hinges up or down on the bars. The adjustment is easily made with a screwdriver.

(8) The Jambs—Also utilize the two-point flat contact weathering system, the same Tee section being used here as at the head and sill, providing exceptionally fine contact with masonry or mullions.



SECTION AA

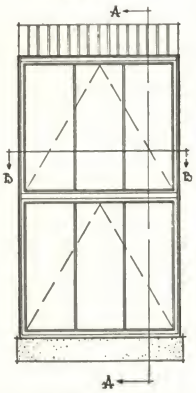


TYPICAL ELEVATION

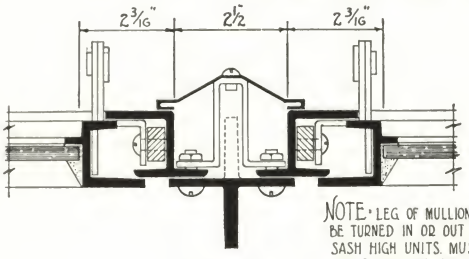
DIMENSIONS ON TYPES ARE WINDOW OPENINGS

STANDARD TYPES

	2'6"	3'3"	3'6"	3'9"	4'0"
5'0"	2650	3350	3650	3950	4050
5'6"	2656	3356	3656	3956	4056
6'0"	2660	3360	3660	3960	4060
6'6"	2666	3366	3666	3966	4066
7'5½"	2676	3376	3676	3976	4076
8'2½"	2683	3383	3683	3983	4083
8'11½"	2690	3390	3690	3990	4090

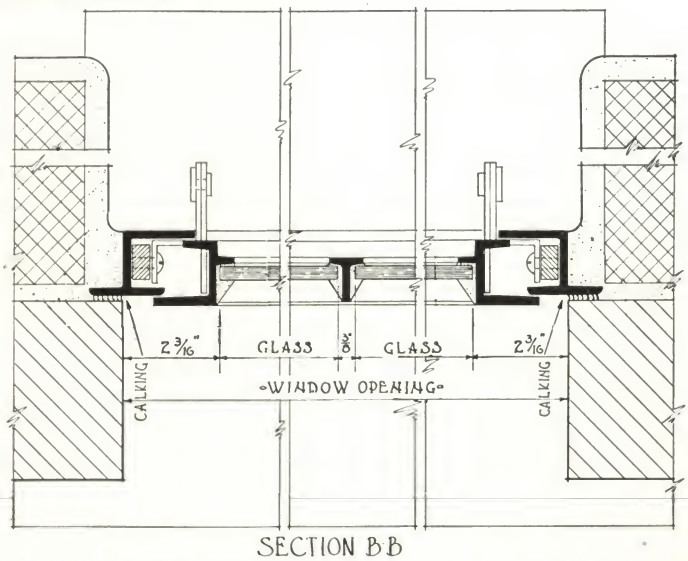


ELEVATION - SINGLE UNIT



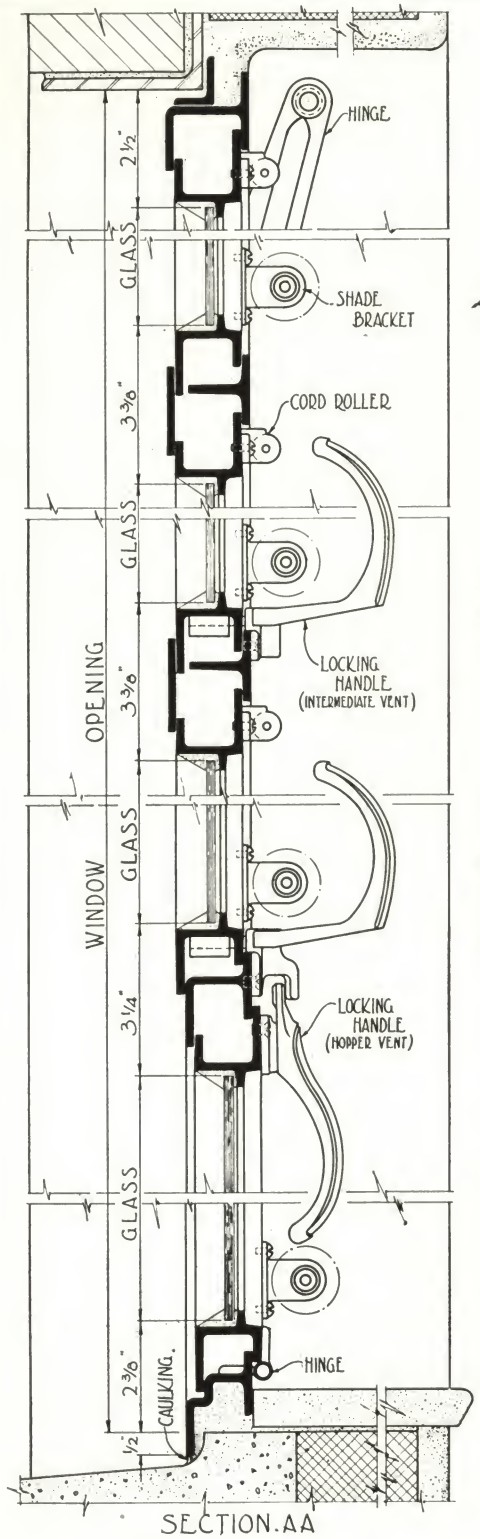
SECTION CC

NOTE: LEG OF MULLION CAN BE TURNED IN OR OUT ON 2 SASH HIGH UNITS. MUST BE OUT TURNED ON ALL 3 SASH HIGH UNITS.

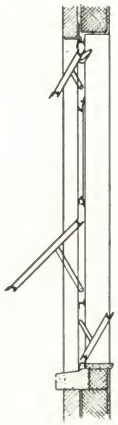


SECTION BB

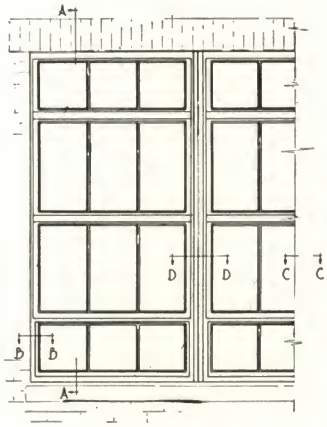
TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES — STANDARD DETAILS **DONOVAN AWNING TYPE STEEL WINDOWS**	PLATE No. **P-8** OCTOBER, 1935



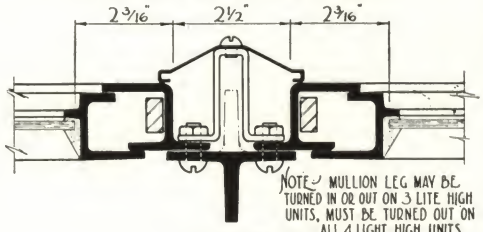
SECTION AA



SECTION



TYPICAL ELEVATION
(FOR OPERATION OF VENTS REFER TO NOTES)



NOTE: MULLION LEG MAY BE TURNED IN OR OUT ON 3 LITE HIGH UNITS, MUST BE TURNED OUT ON ALL 4 LIGHT HIGH UNITS.

SECTION DD
MULLION

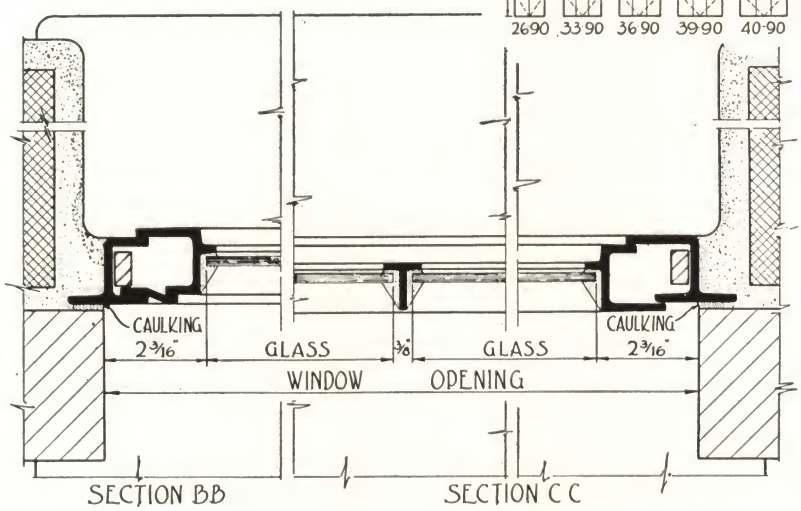
NOTES:

THE HOPPER AND TRANSOM VENTS ARE CONNECTED BY A CONCEALED OPERATING BAR. OPERATION OF THE TRANSOM VENT IS SIMULTANEOUS WITH AND IN DIRECT RELATION TO THE OPERATION OF THE HOPPER VENT.

THE INTERMEDIATE VENTS OPERATE INDEPENDENTLY OF THE TRANSOM AND HOPPER VENTS, AND OF EACH OTHER.

STANDARD
TYPES AND SIZES

	2'-6"	3'-3"	3'-6"	3'-9"	4'-0"
5'-0"	26 50	33 50	36 50	39 50	40 50
5'-6"	26 56	33 56	36 56	39 56	40 56
6'-0"	26 60	33 60	36 60	39 60	40 60
6'-6"	26 66	33 66	36 66	39 66	40 66
7'-0"	26 70	33 70	36 70	39 70	40 70
7'-6"	26 76	33 76	36 76	39 76	40 76
8'-0"	26 80	33 80	36 80	39 80	40 80
8'-6"	26 86	33 86	36 86	39 86	40 86
9'-0"	26 90	33 90	36 90	39 90	40 90



SECTION BB

SECTION C C

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES—STANDARD DETAILS DONOVAN AWNING TYPE STEEL WINDOWS MODEL 15	PLATE No. P-7 NOVEMBER, 1935

RESIDENCE CASEMENTS

TRUSCON Casements are modern windows of inherent beauty, architectural harmony, simplicity, fine quality and superior craftsmanship. Constant effort toward their improvement has resulted in many changes—the sections are of better design, the hardware is artistic, the weathering is positive and screening has been developed so that the complete casement presents a degree of refinement. Storm windows are available for use in rigorous climates or for air-conditioning.

Single and combination casements in a large range of sizes, with or without sill ventilators or transoms, permit a selection of the exact types to meet individual requirements.

CONSTRUCTION DETAILS

(1) Transom Bar Section—Showing shape and position when used in a unit having fixed transom and side lights.

(2) Swing Leaf Head Section and Transom Bar—Specially designed transom section with drip as an integral part, affording protection to swing leaf below. Continuous from jamb to jamb.

(3) Interior Supporting Member for Swing Leaf—Heavy tee section forming jamb for swing leaf, with double contact weathering and insulating air space.

(4) Corners of Frame and Swing Leaf—Corners of swing leaf and frame are mitered, electrically butt welded and ground smooth.

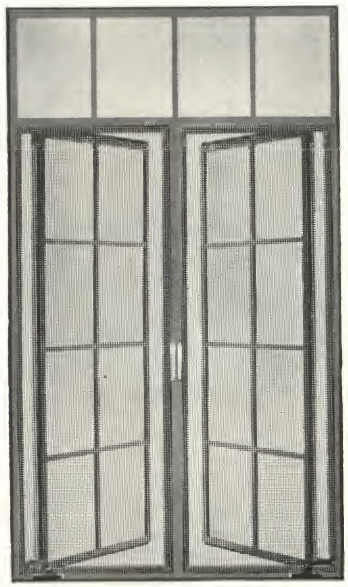
(5) Friction Type Extension Hinge—Allows for easy cleaning of windows from inside and, when adjusted, has the proper amount of friction to hold swing leaf in any desired position. No subsequent adjusting required.

(6) Sill Section of Zee Bars—Affording ease for erection in any type of construction; showing wide double contact weathering.

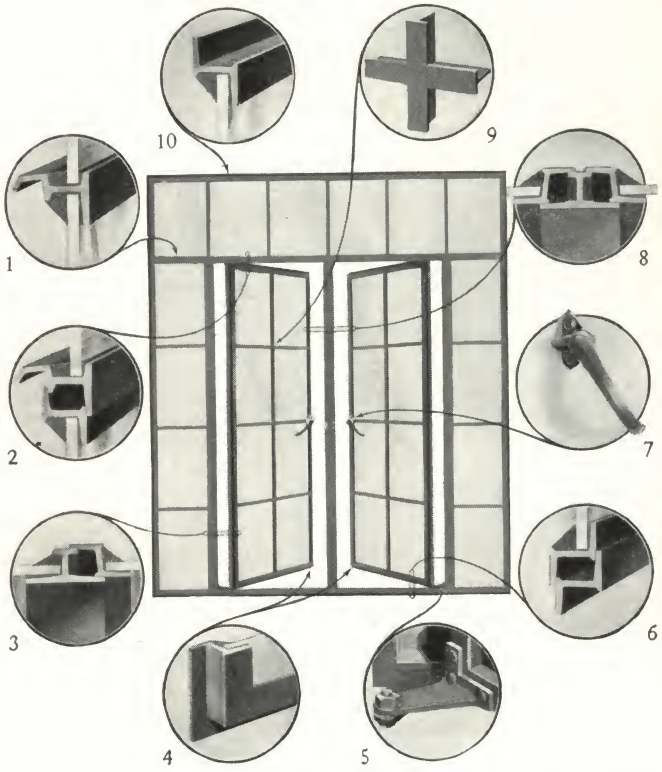
(7) Artistic Handle—Standard handle with a neat black lacquer finish. Also furnished in chromium, Butler nickel or solid bronze.

(8) Vertical Meeting Rail—Showing the specially designed heavy hot-rolled section as used in combination units for meeting rail. Provides maximum weathering, insulating air space, and rigidity.

(9) Muntin Intersections—Made with a mitered and mechanically interlocked joint obtaining the maximum strength of muntin bars and securing a neat, flush surface on the inside. Vertical and horizontal muntins are of the same size affording a uniform putty face and permitting a satisfactory glazed installation.



SERIES 5



(10) Zee Bar Sections—Used for outside frame members of all combinations and for stiles and rails of swing leaves.

UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for all standard sizes shown outside putty glazed, provided glass lights do not exceed 125 square inches.

SPECIFICATIONS

(1) General—All window openings shown on drawings, unless otherwise specified, shall be fitted with Residence Casements, Series 5, as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution will be permitted without the written approval of the architect.

(2) Scope of Work—This contractor shall include in his work the furnishing of all steel casements complete, the adjusting after erection but before glazing, and the attaching of hardware, all as called for on drawings and specified herein. This contractor shall also furnish the necessary mastic as called for in the manufacturer's standards.

(3) Work and Material Not Included—Glass, putty, glazing, field painting and caulking are not included in this contract.

(4) Material—Truscon specification, low carbon new billet, hot-rolled steel, shall be used in the manufacture of all members.

(5) Construction—(a) All casements and standard combinations shall be manufactured in complete units at factory. The nominal glass size shall be 8x12 in.

(b) All frames, stiles and rail members of swing leaves shall be Zee bars. All corners shall be mitered and electrically butt welded. Exposed faces at welds shall be ground smooth.

(c) All muntins shall be Tee Bars with a $\frac{5}{8}$ in. face and a depth of $\frac{7}{8}$ in., and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with face on the inside.

(Continued on page 14)

(d) Joints of muntins with frames, stiles and rails shall be tenoned, mortised and air hammer riveted. Horizontal muntins shall be punched for glazing clips.

(e) Windows shall be hinged to swing right or left as indicated. Continuous double contact weathering between swing leaves and frame shall be provided.

(f) All side hung swing leaves shall open outward and be equipped with heavy extension (cleaning) hinges securely riveted to rails of swing leaves and electrically welded or riveted to frames.

(g) Transom ventilators shall be hinged at the top to open out and shall be equipped with close-up friction hinges.

(h) Sill ventilators shall be bottom hinged to open in and shall be equipped with steel butt hinges. All sill ventilators shall be prepared to receive standard fixed type screens applied to the outside. No special screen hardware necessary.

(i) Hinges shall be of the special Truscon friction type, designed to hold window open in any desired position.

(j) Where combinations of standard units are required for any single opening, vertical and horizontal mullions shall be used to join them.

(k) A continuous drip shall be provided on transom bars of all standard swing leaf combinations, or at the head when the ventilator extends full height of the opening.

(l) All units shall be drilled to receive standard shade bracket hardware.

(6) Hardware—(a) All hardware shall be shipped unattached and packed separately to prevent damage and shall be applied after erection and painting.

NON-SCREEN TYPE

(b) The cam action locking handle shall be of standard design furnished in black lacquer finish, and shall be attached to swing leaves (side hung). Beveled brass strike plate shall be attached to frame (see note).

(c) Standard push bars in black lacquer finish shall be furnished for all top hung transom units.

(d) Concealed friction adjusters shall be provided for all sill ventilators; two adjusters per ventilator.

SCREEN TYPE

(e) Screen type hardware shall be fully automatic and positive and shall control the swing leaf independently of the screen.

(f) Standard screen type hardware shall consist of either Autolock or Artex Underscreen Operator and concealed latch locking handle. Autolock Operator shall have a black finish case and Old English Bronze finish bar. Artex Operator shall have a black finish case and Old English Bronze finish handle. Concealed latch locking handle shall have Old English Bronze finish. Worm drive type operator can be furnished if desired.

Autolock Operator permits the use of either side hinged or fixed screen. Only a fixed type screen can be used with Artex Operator and the worm drive operator.

(7) Painting—Casements shall be given one prime coat of steel grey mineral paint at factory before shipment.

(8) Glazing—All casements shall be glazed on the outside. Glass shall be held in place by Truscon copper clad, spring steel wire glazing clips. All glass shall be bed and face puttied with Truscon special casement window putty.

(9) Erection—(a) Each unit shall be set plumb and true, aligned after installation and adjusted before glazing.

(b) Mastic in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

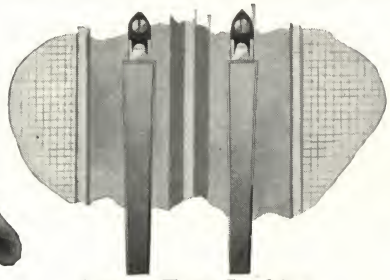
(When so desired, the Erection Division of TRUSCON STEEL COMPANY *will contract for the erection and adjusting of all casements in prepared openings.)*

Notes: Muntin bars may be omitted for use of leaded glass of any pattern, or for single lights. Glazing clips and mastic are furnished and shipped with casements without additional charge.

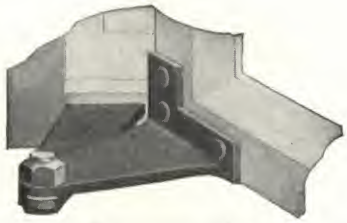
Cam locking handles and worm and gear operators, can be furnished in solid bronze, Old English, Butler Nickel or Chromium finish at an additional cost, Architect to specify finish.

HARDWARE FOR RESIDENCE CASEMENTS—SERIES 5

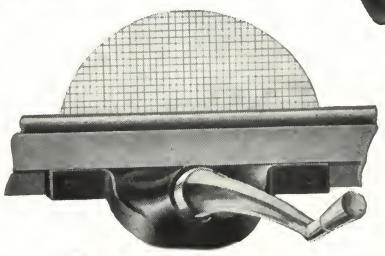
Standard Locking Handles



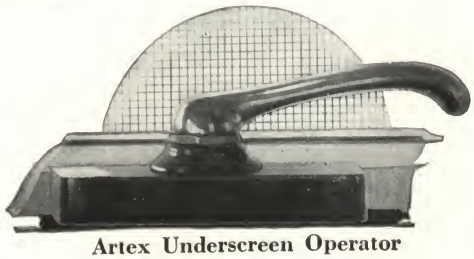
Screen Type Locking Handles



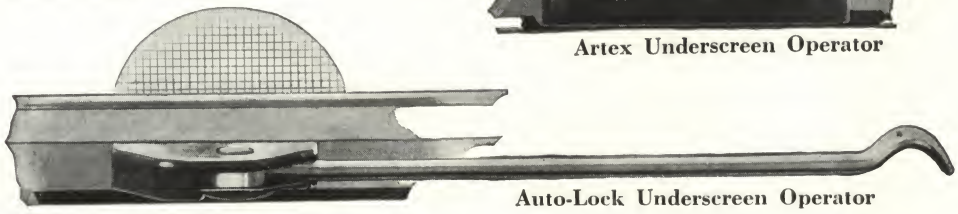
Extension Hinge



Worm Drive Operator



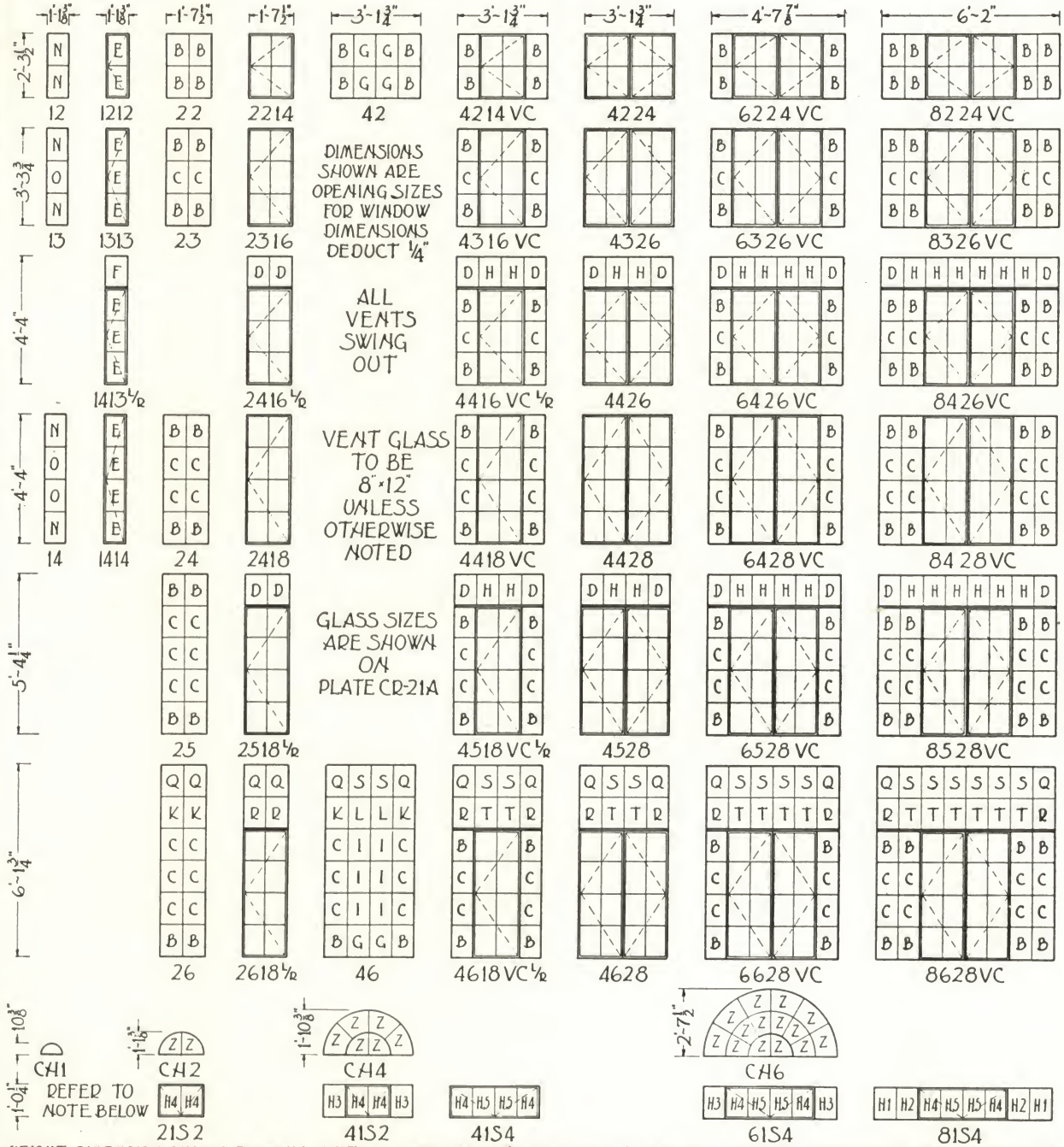
Artex Underscreen Operator



Auto-Lock Underscreen Operator

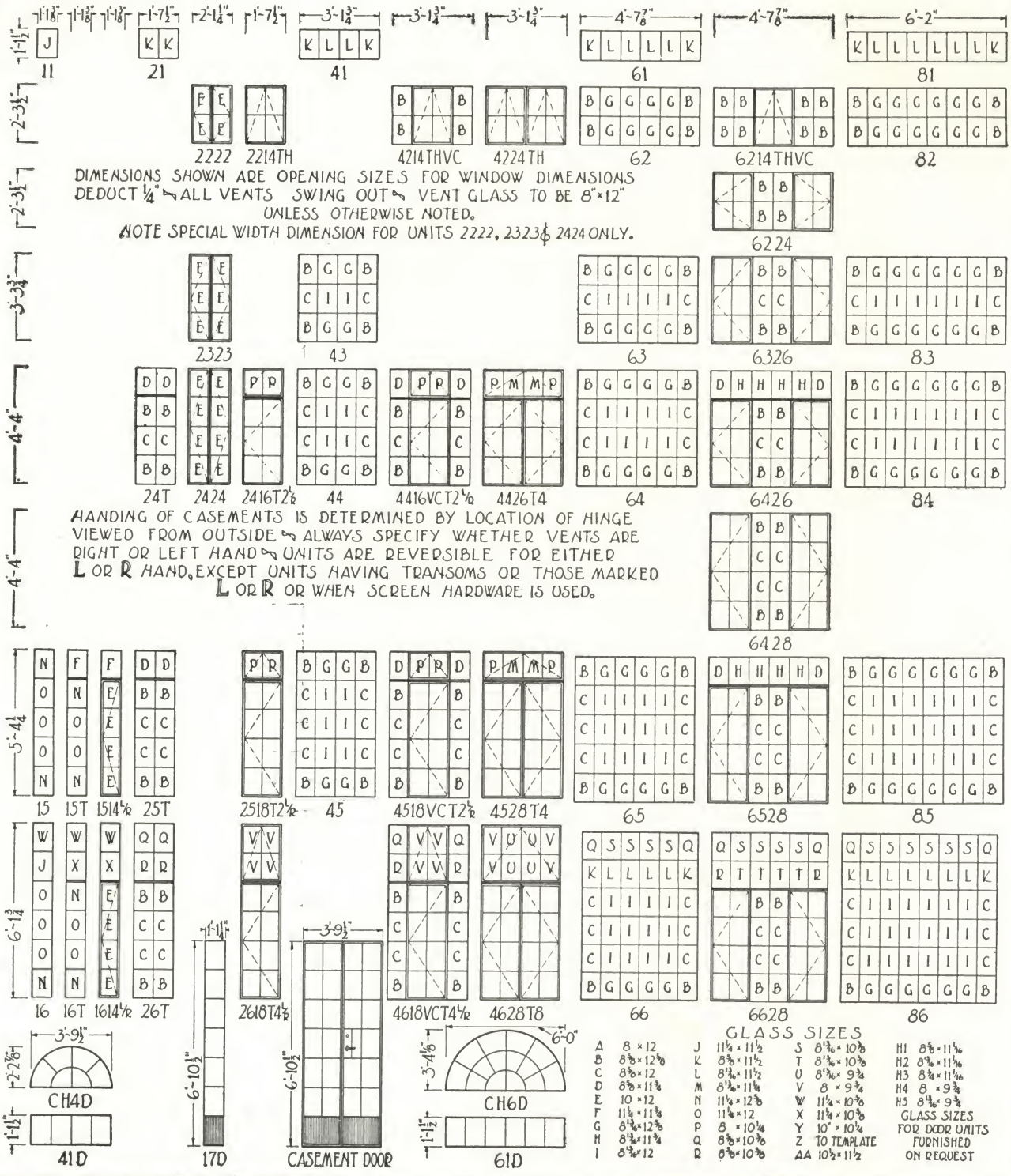
STANDARD UNITS

CARRIED IN STOCK



HEIGHT DIMENSION SHOWN FOR SILL UNITS IS DIMENSION TO BE ADDED TO SECURE OPENING DIMENSION OF COMBINATION UNITS. FOR OPENING DIMENSION OF SILL UNITS USED AS SEPARATE WINDOWS ADD ¾" TO HEIGHT DIMENSION SHOWN. ALL VENTS VIEWED FROM OUTSIDE. HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE. ALWAYS SPECIFY WHETHER VENTS ARE RIGHT OR LEFT HAND. UNITS ARE REVERSIBLE FOR EITHER L OR R HAND, EXCEPT UNITS HAVING TRANSOMS OR THOSE MARKED L OR R OR WHEN SCREEN HARDWARE IS USED.

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES **RESIDENCE CASEMENTS** SERIES 5	PLATE No. **CR-21** SEPTEMBER, 1934

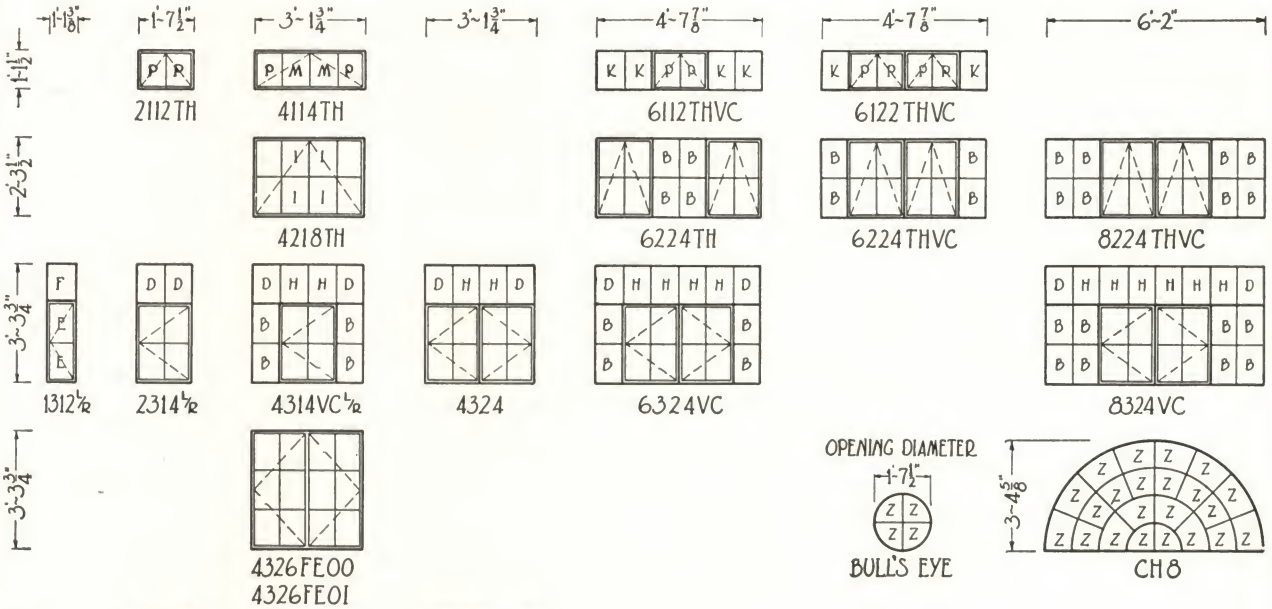


TRUSCON STEEL COMPANY
Youngstown, Ohio

TYPES AND SIZES
RESIDENCE CASEMENTS
SERIES 5

PLATE No.
CR-21A
OCTOBER, 1935

MADE ON ORDER



VENT GLASS TO BE 8"×12" UNLESS OTHERWISE NOTED

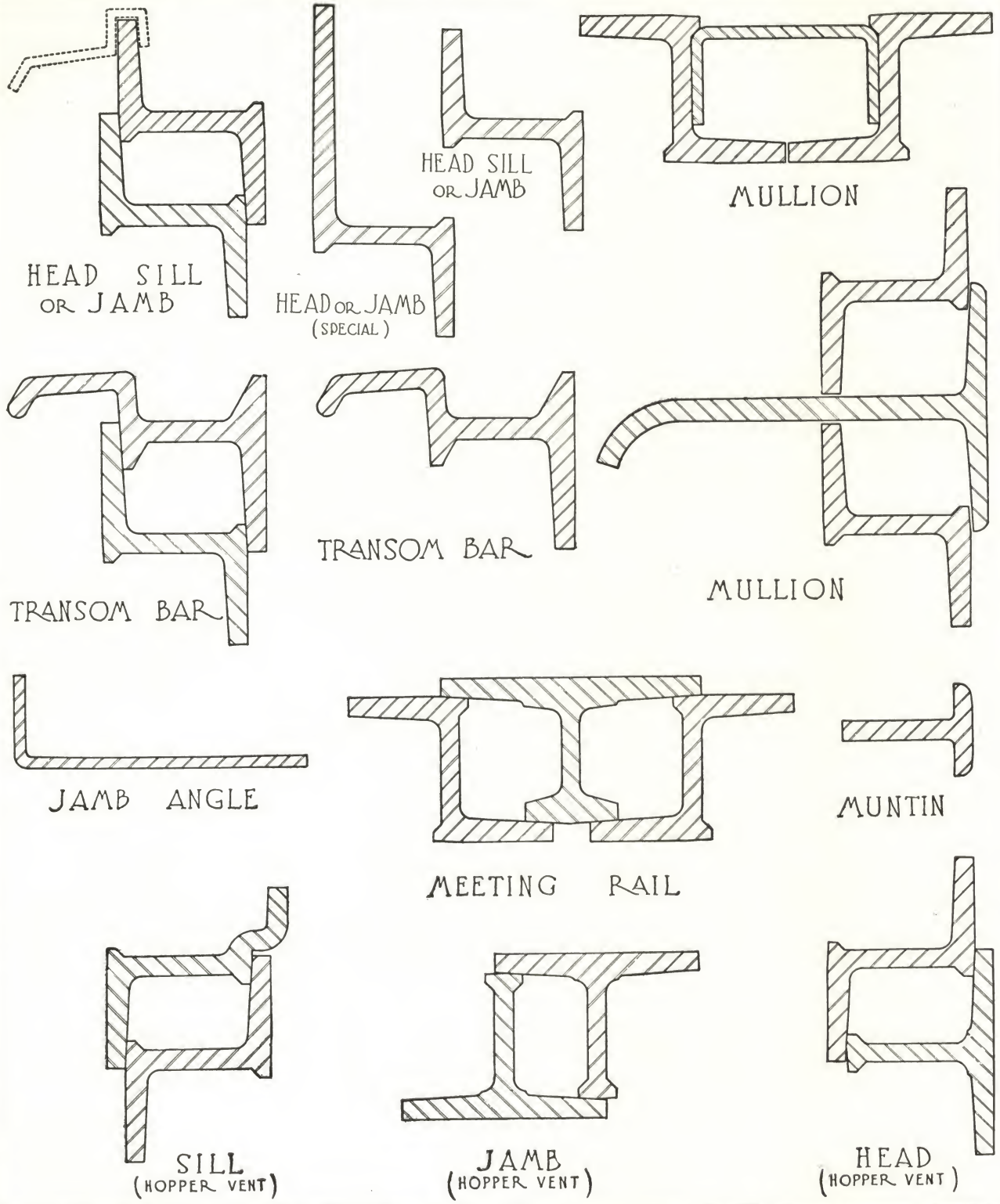
DIMENSIONS SHOWN ARE OPENING SIZES FOR WINDOW DIMENSIONS DEDUCT ¼"

FOR GLASS SIZES REFER TO PLATE CR21A

ALL VENTS VIEWED FROM OUTSIDE ∾ HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE VIEWED FROM OUTSIDE ∾ ALWAYS SPECIFY WHETHER VENTS ARE LEFT OR RIGHT ∾ UNITS ARE REVERSIBLE FOR EITHER L OR R HAND SWING EXCEPT FOR UNITS HAVING TRANSOMS OR THOSE MARKED L OR R OR WHEN SCREEN HARDWARE IS USED.

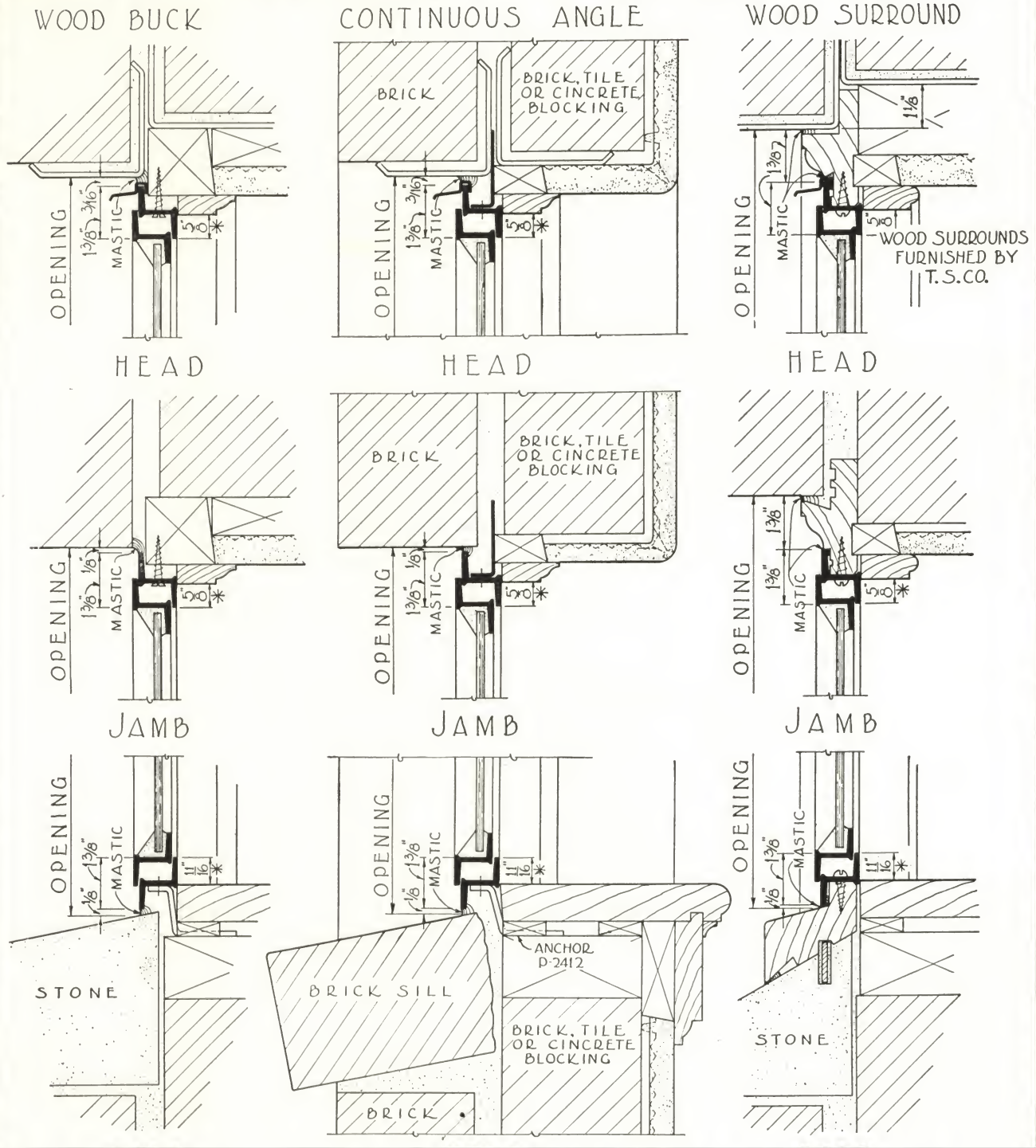
FE00 – MEANS FIRE ESCAPE UNIT OPENING OUT.
FE01 – MEANS FIRE ESCAPE UNIT OPENING IN.

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES **RESIDENCE CASEMENTS** SERIES 5	PLATE No. **CR-21C** OCTOBER, 1934



TRUSCON STEEL COMPANY Youngstown, Ohio	FULL SIZE SECTIONS **RESIDENCE CASEMENTS** SERIES 5.	PLATE No. **CR-22** OCTOBER, 1935

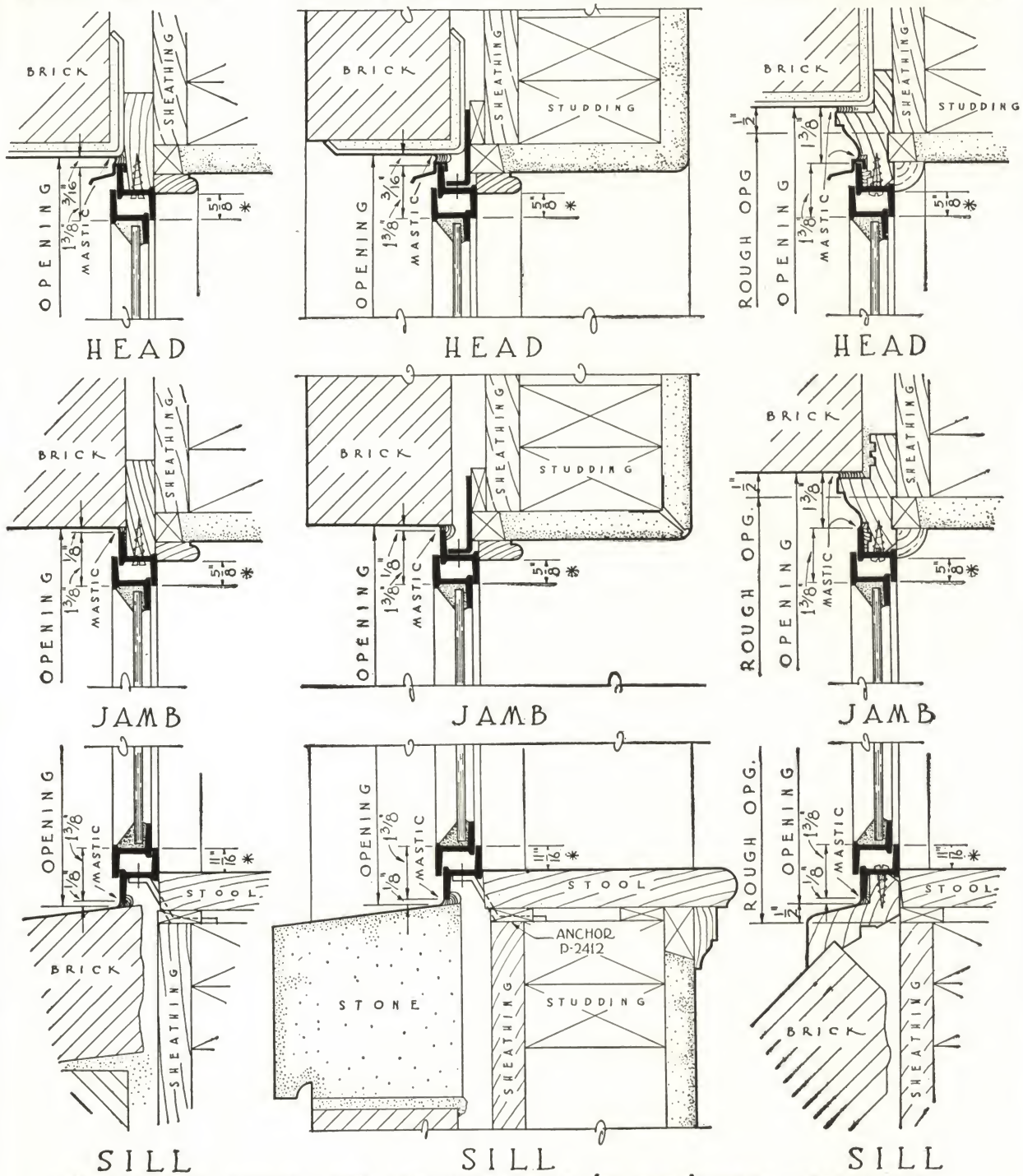
SOLID MASONRY CONSTRUCTION



*~CLEARANCE REQUIRED FOR APPLICATION OF ANY "TRUSCON" SCREEN COMBINATION

TRUSCON STEEL COMPANY Youngstown, Ohio	SOLID MASONRY CONSTRUCTION DETAILS **RESIDENCE CASEMENTS** SERIES 5	PLATE No. **CR-23** OCTOBER, 1935

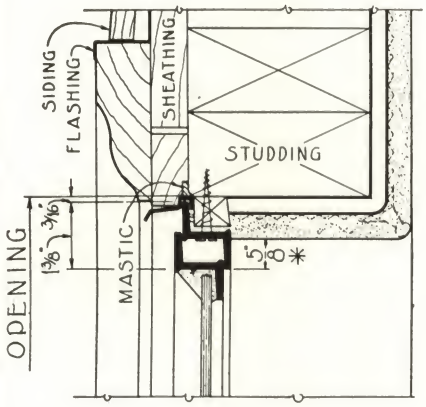
BRICK VENEER CONSTRUCTION



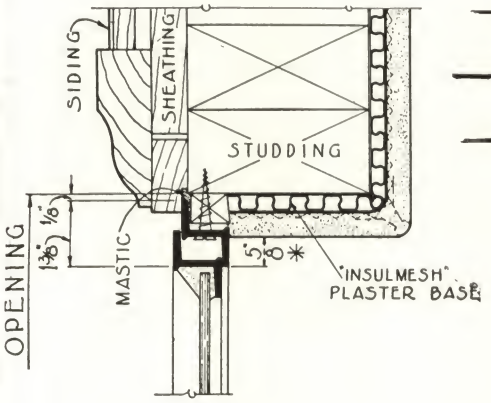
* CLEARANCE REQUIRED FOR APPLICATION OF ANY 'TRUSCON' SCREEN COMBINATION.

TRUSCON STEEL COMPANY Youngstown, Ohio	DETAILS OF BRICK VENEER CONSTRUCTION **RESIDENCE CASEMENTS** SERIES 5	PLATE No. **CR-24** OCTOBER, 1935

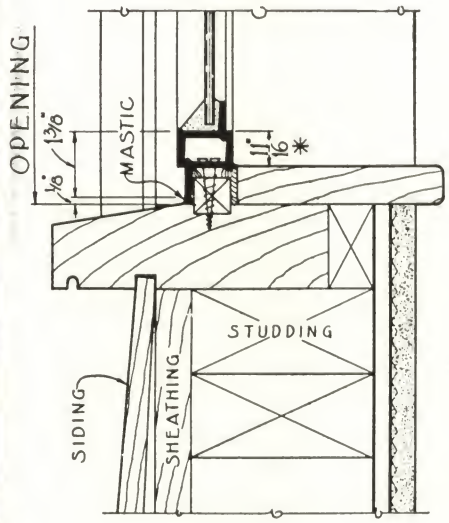
FRAME CONSTRUCTION



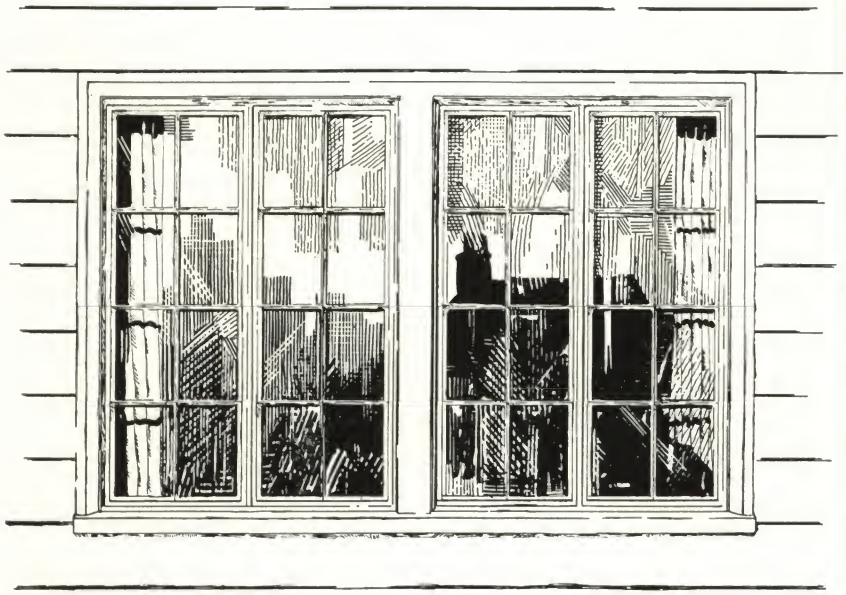
HEAD



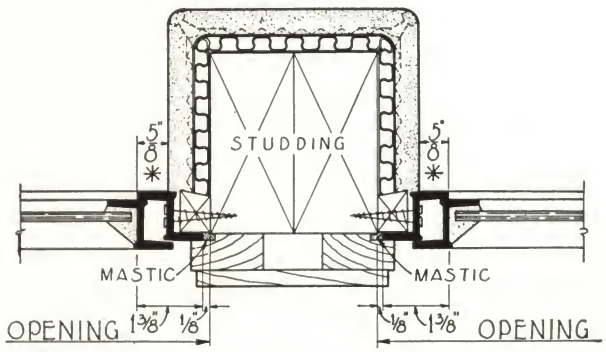
JAMB



SILL



EXTERIOR ELEVATION
TWO WINDOW BAY ~ FRAME MULLION



MULLION

*~CLEARANCE REQUIRED FOR INSTALLATION OF ANY "TRUSCON" SCREEN COMBINATION

TRUSCON STEEL COMPANY Youngstown, Ohio	FRAME CONSTRUCTION DETAILS **RESIDENCE CASEMENTS** SERIES 5	PLATE No. **CR-25** OCTOBER, 1934

HOME DEVELOPMENT CASEMENTS

Series 5

THE Truscon Home Development window designed primarily for homes where cost is of paramount consideration, is truly a modern window. Horizontal lines are accentuated. Hardware and screens are simple in design but offer convenience in opening or closing the window and are "insect tight." Sections used in its manufacture are the same as those used in the production of Residence Casements.

GLASS SIZE

The nominal glass size of 16″x12″ as compared with the 8″x12″ glass size of the Residence Casement means a considerable saving in glazing costs.

Twenty sizes and 32 types are carried in stock for immediate shipment. These stock units should take care of practically any job requirements.

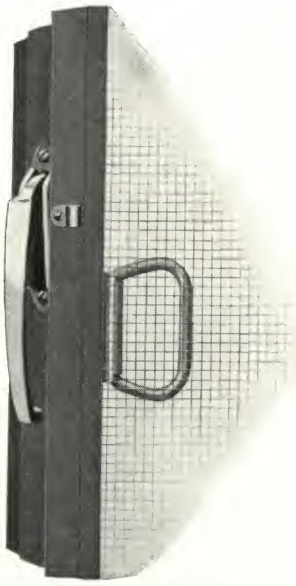
SCREENS

The screen used with the Home Development Window is of the side hinged type. However, because of the new window hardware, it differs from previous hinged screens in that it fits flat against the window even when the window is closed. Only two screws are used in attaching the screen which saves time in removing for storage.

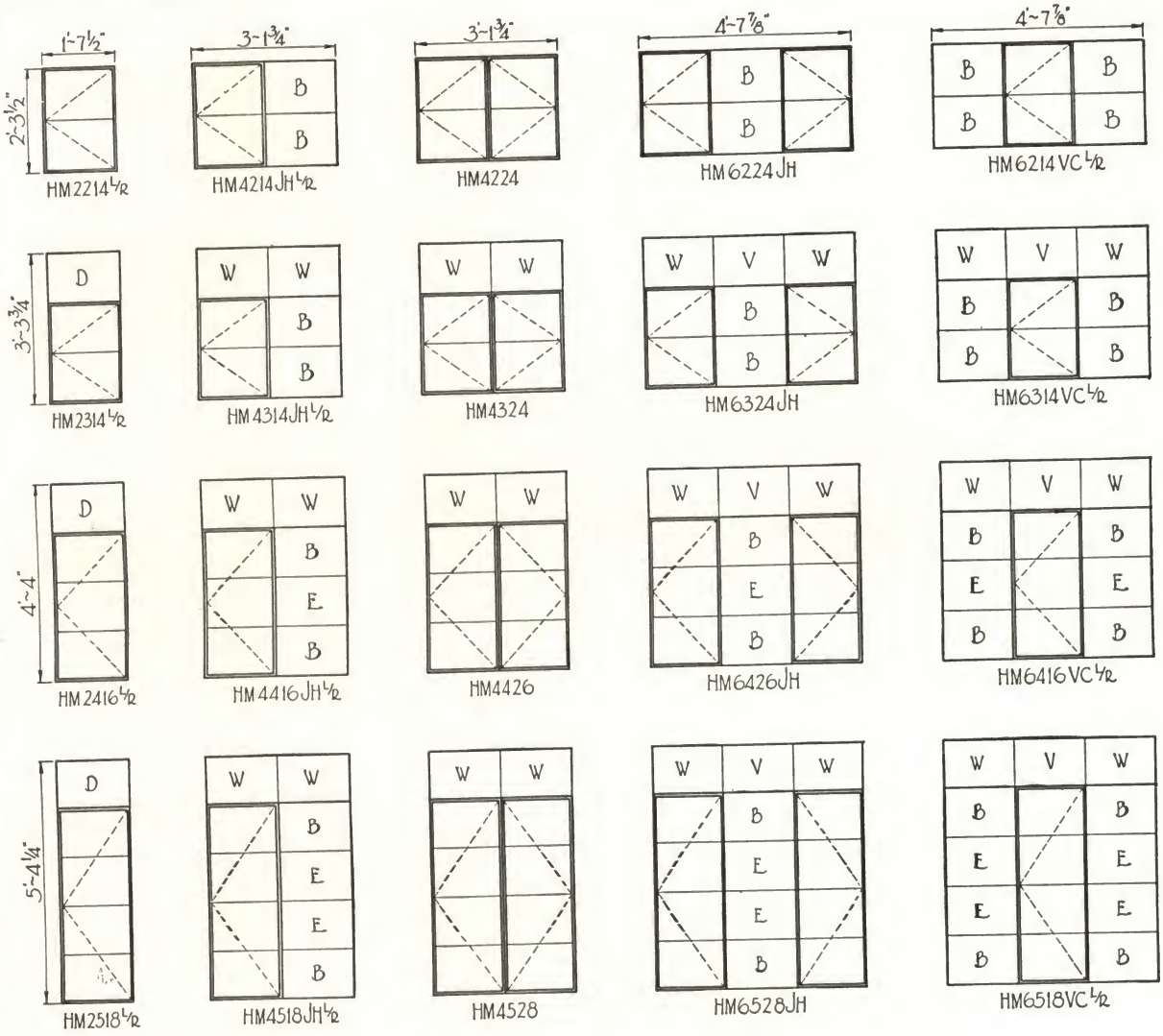
HARDWARE

The locking handle is attached to the casement frame and locks through the window section. Cam action insures the ventilator being drawn tightly against the frame for better weathering. The inconspicuous grip attached to the ventilator is used for opening the ventilator or pulling it shut. Cleaning type friction hinges hold the ventilator in any open position and make it possible to wash the outside of the glass from within the room.

Screen Open



Screen Closed



GLASS LIST

HORIZONTAL MUNTIN WINDOWS

GLASS SIZE FOR ALL VENTS IS 16"×12"

B — 17½" × 12⅝"
D — 17½" × 11¾"
E — 17½ × 12"
V — 17⅞" × 11¾"
W — 17 1⁄16" × 11¾"

NOTES

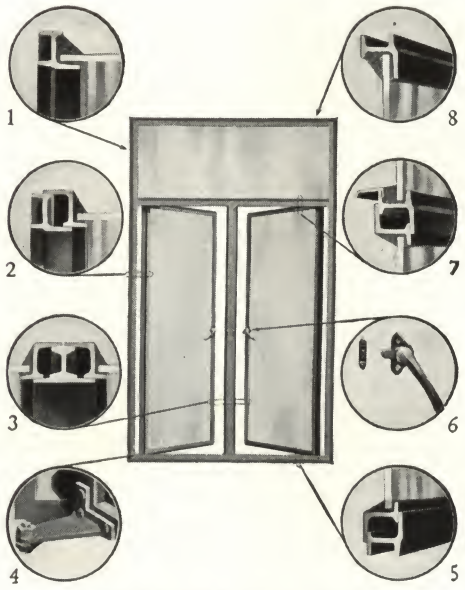
DIMENSIONS SHOWN ARE WINDOW OPENING DIMENSIONS.
ALL UNITS ARE VIEWED FROM OUTSIDE.
ALL VENTS ARE SIDE HINGED TO SWING OUT.
HANDING OF SINGLE VENTS MUST ALWAYS BE STATED.
MUNTINS SHOWN MAY BE OMITTED AT NO CHARGE.

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES - - STOCK UNITS HOME DEVELOPMENT STEEL CASEMENTS SERIES 5	PLATE No. CR-38 JUNE, 1935

ARCHITECTURAL CASEMENTS

SERIES 15

THE Architectural Casement, Series 15, has been designed to fill the need of a heavier type of casement for better class residential, apartment, public and semi-public buildings. Although standard types are available to fill average requirements, these casements can be built to conform with any architectural design.



CONSTRUCTION DETAILS

(1) Jamb Section—Cross section of continuous frame member at jambs. All corners of frame are mitered, butt welded and ground smooth before assembly.

(2) Jamb Section Through Frame Member and Swing Leaf Section—Showing positive ⅜ in. double contact weathering.

(3) Vertical Meeting Rail Between Swing Leaves—Note Heavy Tee section, flush on inside with frame, compact assembly and ⅜ in. positive double-contact weathering.

(4) Extension Type Friction Hinge—Permits easy cleaning of windows from the inside and holds swing leaf in any desired position without the use of an adjuster. Bronze bushings assure long wear.

(5) Sill Section—Cross section through bottom rail of swing leaves and frame section, showing ⅜ in. positive double-contact weathering.

(6) Locking Handle and Strike—Pure in design. Made of bronze in old English finish. Other finishes available when specified.

(7) Detail of Transom Bar—With fixed transom light above and swing leaves below, showing ⅜ in. double-contact weathering.

(8) Head Section—Cross-section of frame at head when fixed transom light is required. Frame section continuous from jamb to jamb.

UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for all standard sizes shown up to six lights in height provided glass lights, if outside glazing is used, do not exceed 125 square inches using standard muntin bar or 350 square inches using extra heavy muntin bar. If inside bead glazing is used, glass sizes are limited to 155 square inches.

SPECIFICATIONS

(1) General—All window openings shown on the drawings, unless otherwise specified, shall be fitted with Architectural Casements, Series 15, as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitutions will be permitted without the written approval of the architect.

(2) Material—Truscon specification, new billet, hot-rolled, steel shall be used in the manufacture of all members.

(3) Construction—(a) *All units* shall be square and true and constructed of sections not less than $1\frac{7}{16}$ in. deep. The combined weight of frame and ventilator sections exclusive of glazing beads or sub-frames shall be not less than 3.51 pounds per linear foot. The outside framing section shall be a channel leg section continuous from sill to head and jamb to jamb and shaped for double flat contact weathering of not less than ⅜ in. between frames and swing leaves. Each corner of swing leaves and frames shall be mitered, electrically butt welded and ground smooth before assembly.

(b) *Muntins* shall be specially designed Tee Bar sections and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted (see note).

(c) *All stiles, rails, frames and muntins* shall be prepared for outside putty glazing with spring clips. (See note.)

(d) *All side hinged swing leaves* shall swing out, unless otherwise specified, and shall be equipped with Truscon design friction type, bronze bushed hinges designed to hold the swing leaf open in any desired position. Transoms shall be equipped with steel butt bronze pin hinges.

(e) *A continuous drip* shall be provided on transom bars of all standard swing leaf combinations, or at the head where ventilators extend full height of the opening.

(f) *Windows* shall be prepared to receive either screen type or non-screen type hardware as hereinafter specified.

(4) Hardware—

NON-SCREEN TYPE

(a) *All hardware* shall be bronze, Old English finish.

(b) For *side hinged swing leaves* up to and including five feet in height, a bronze cam acting locking handle and bronze strike shall be furnished. For side hinged swing leaves over five feet in height or when center line of swing leaf is 6 ft. 3 in. or more from the floor, bronze double locking device and bronze strikes shall be furnished.

(c) For top hinged transoms a bronze push arm shall be furnished.

(d) For double vented units with clear opening (no meeting rail) bronze cremone bolt hardware shall be furnished.

SCREEN TYPE

(e) Screen type hardware shall be fully automatic and positive and shall control the swing leaf independently of the screen.

(f) Standard Screen Type Hardware for side hinged swing leaves shall consist of either Autolock or Artex Underscreen Operator and concealed latch locking handle. Autolock Operator shall have a bronze case and solid bronze Old English finish bar. Artex Operator shall have black finish case and Old English Bronze finish handle. Concealed latch locking handle shall be solid bronze Old English finish. Worm drive operators in solid bronze Old English finish can be furnished when specified.

(g) Standard screen type hardware for top hung transoms shall consist of heavy bronze Old English finish push bar operating through frame or section.

(5) Painting—Casements shall be given one coat of protective paint at factory before shipment.

(6) Glazing—All casements shall be glazed on the outside with glazing clips (See note).

(7) Erection—(a) *Each unit* shall be set plumb and true in the opening, securely wedged and held in alignment during construction. After windows have been placed in opening and before they have been glazed, the ventilator shall be carefully adjusted.

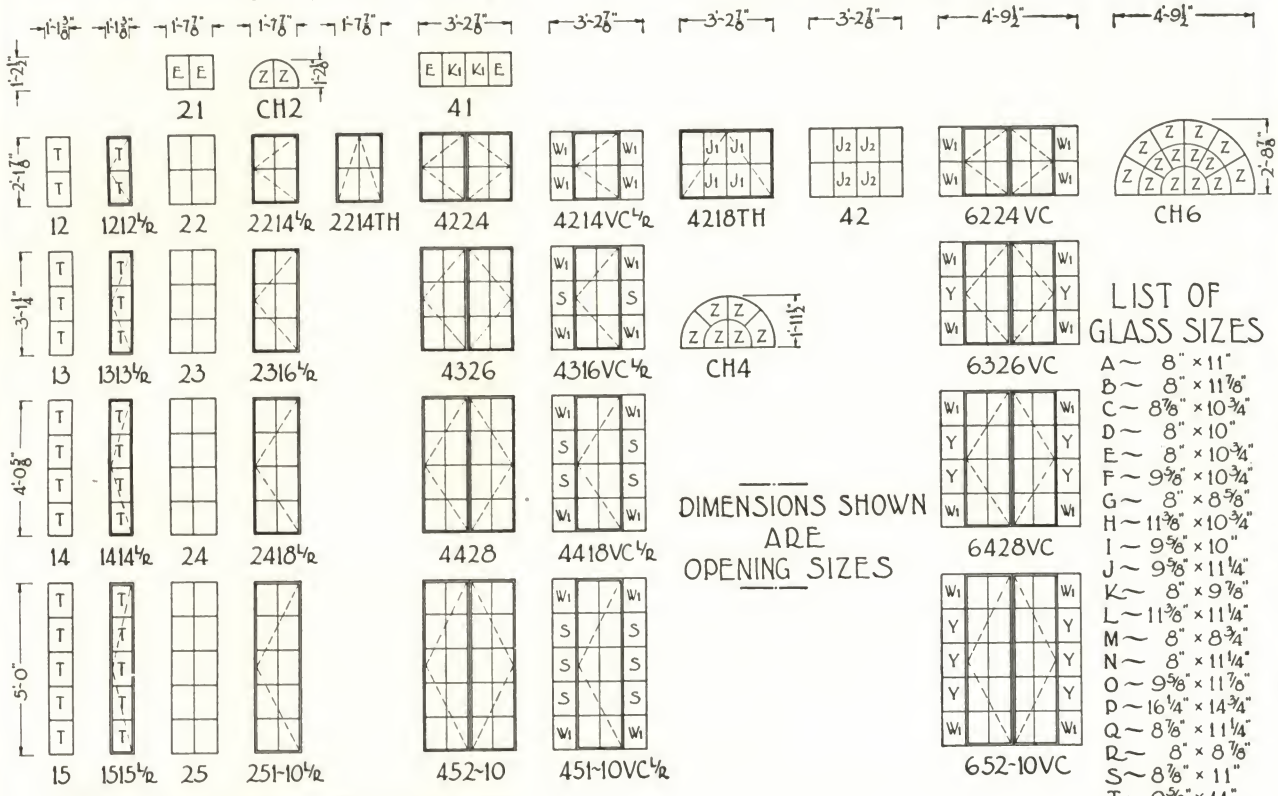
(b) *Mastic* in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

Notes: *Muntin bars may be omitted for use of leaded glass of any pattern, or for single lights.*

Windows may be inside bead glazed if specified.

Architectural Casements, Series 15, can be furnished to "open in."

STOCK TYPES

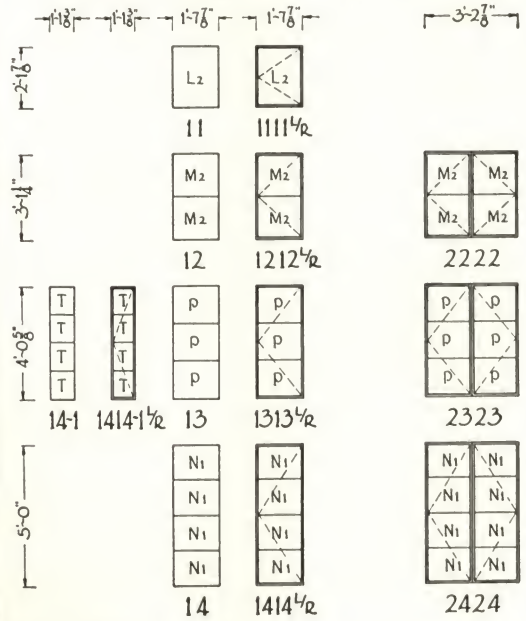


DIMENSIONS SHOWN ARE OPENING SIZES

LIST OF GLASS SIZES

A ~ 8" × 11"
B ~ 8" × 11⅞"
C ~ 8⅞" × 10¾"
D ~ 8" × 10"
E ~ 8" × 10¾"
F ~ 9⅝" × 10¾"
G ~ 8" × 8⅝"
H ~ 11⅜" × 10¾"
I ~ 9⅝" × 10"
J ~ 9⅝" × 11¼"
K ~ 8" × 9⅞"
L ~ 11⅜" × 11¼"
M ~ 8" × 8¾"
N ~ 8" × 11¼"
O ~ 9⅝" × 11⅞"
P ~ 16¼" × 14¾"
Q ~ 8⅞" × 11¼"
R ~ 8" × 8⅞"
S ~ 8⅞" × 11"
T ~ 9⅝" × 11"
V ~ 11⅜" × 11"
W ~ 9⅝" × 9⅞"
X ~ 9⅝" × 10⅛"
Y ~ 8¹³⁄₁₆" × 11"
Z ~ TO TEMPLATE
B₁ ~ 11⅜" × 10⅞"
J₁ ~ 8¹³⁄₁₆" × 10⅝"
K₁ ~ 9⅛" × 10¾"
N₁ ~ 16¼" × 13⅞"
O₁ ~ 9⅛" × 11¼"
P₁ ~ 8¾" × 10¾"
S₁ ~ 9³⁄₁₆" × 8⅝"
U₁ ~ 9³⁄₁₆" × 8¾"
V₁ ~ 9³⁄₁₆" × 8⅞"
W₁ ~ 8¹³⁄₁₆" × 11⅞"
X₁ ~ 8¹³⁄₁₆" × 10½"
A₂ ~ 8¹³⁄₁₆" × 10⅜"
C₂ ~ 8¹³⁄₁₆" × 12½"
E₂ ~ 8¹³⁄₁₆" × 10⅜"
F₂ ~ 8¾" × 11¼"
G₂ ~ 8⅞" × 10⅜"
I₂ ~ 9⅛" × 11⅞"
J₂ ~ 9⅛" × 11"
K₂ ~ 8⅞" × 10½"
L₂ ~ 16¼" × 22¼"
M₂ ~ 16¼" × 16⅝"
O₂ ~ 9⅛" × 10⅜"

SPANISH TYPES



NOTES

ALL CASEMENTS ARE VIEWED FROM THE OUTSIDE.

HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGES. HINGED AT THE RIGHT IS A RIGHT HAND CASEMENT. HINGED AT THE LEFT IS A LEFT HAND CASEMENT.

MUNTIN BARS MAY BE OMITTED IF DESIRED.

ALL CASEMENTS TO BE SET IN MASTIC CEMENT.

STANDARD MULLION DIMENSION IS ¼".

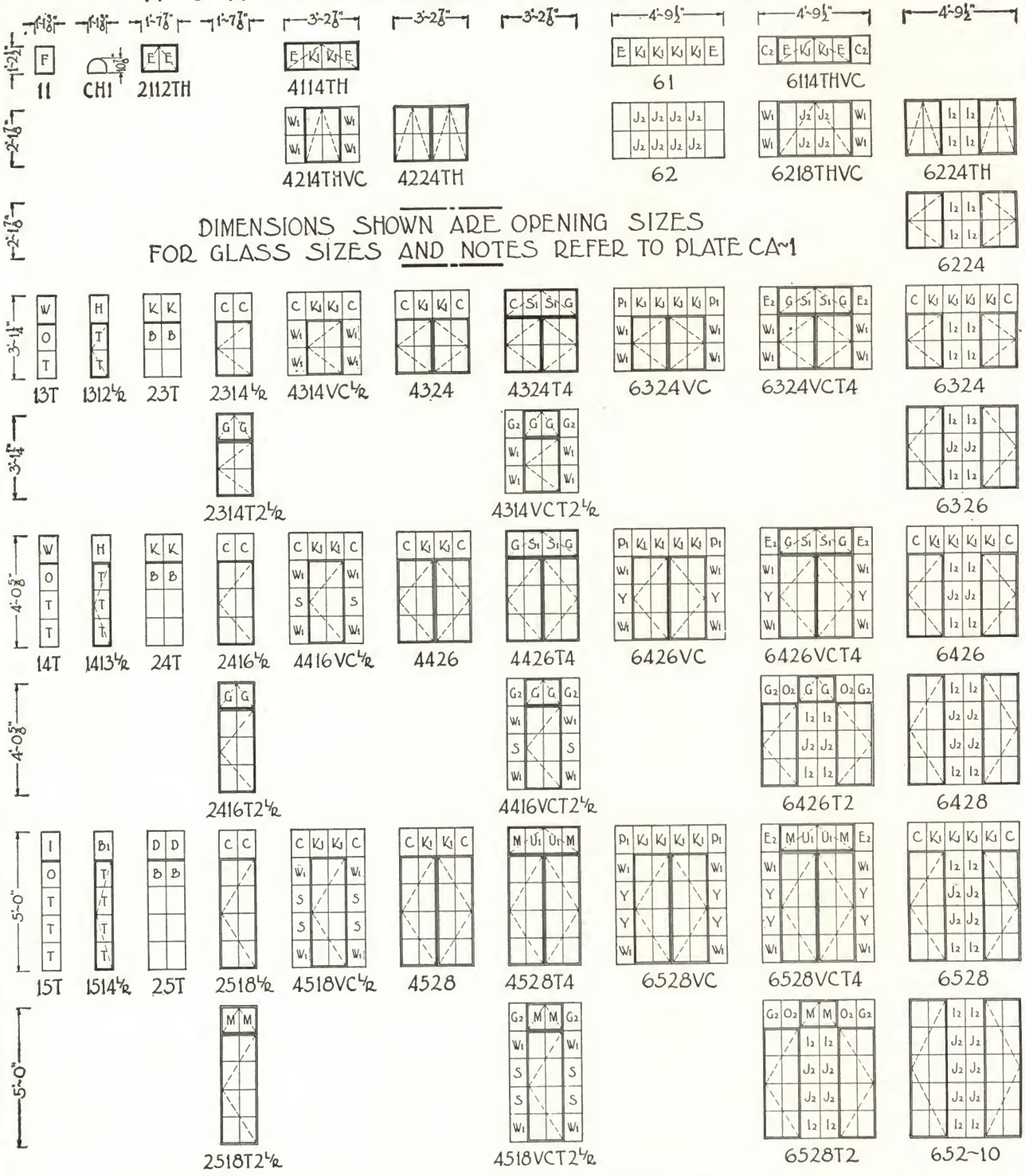
WHERE MULLIONS ARE USED, TO OBTAIN OPENING DIMENSIONS, ADD TOGETHER OPENING DIMENSIONS OF THE SPECIFIC WINDOWS TO BE COMBINED.

UNLESS OTHERWISE NOTED GLASS SIZE TO BE **8" × 11"**.

FOR CASEMENT DOOR, SIDELIGHTS AND TRANSOMS TYPES AND SIZES SEE PLATE CA-10.

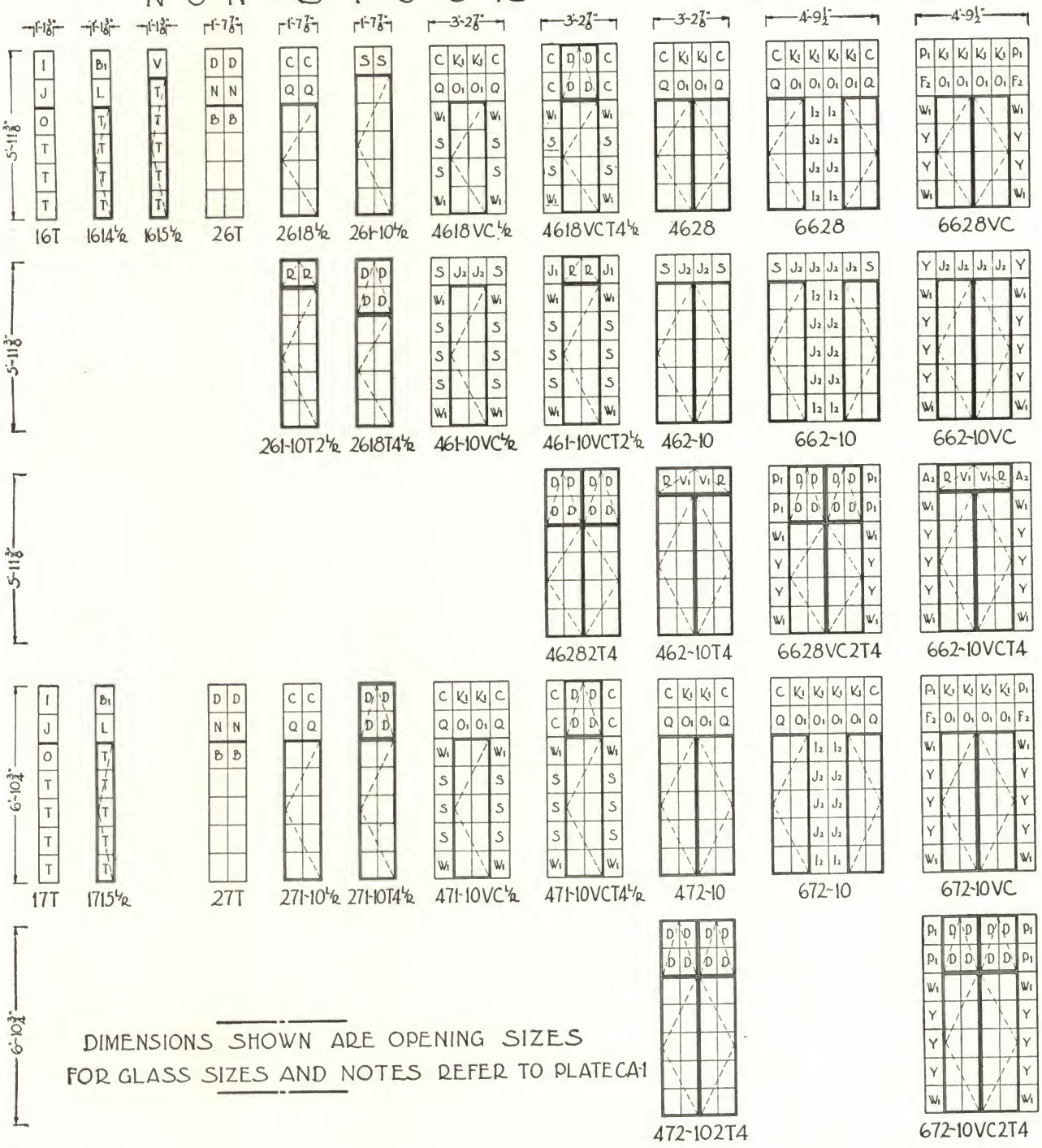
TRUSCON STEEL COMPANY Youngstown, Ohio	STOCK TYPES AND SIZES **ARCHITECTURAL STEEL CASEMENTS** SERIES 15	PLATE No. **CA-1** NOVEMBER, 1934

NON-STOCK TYPES



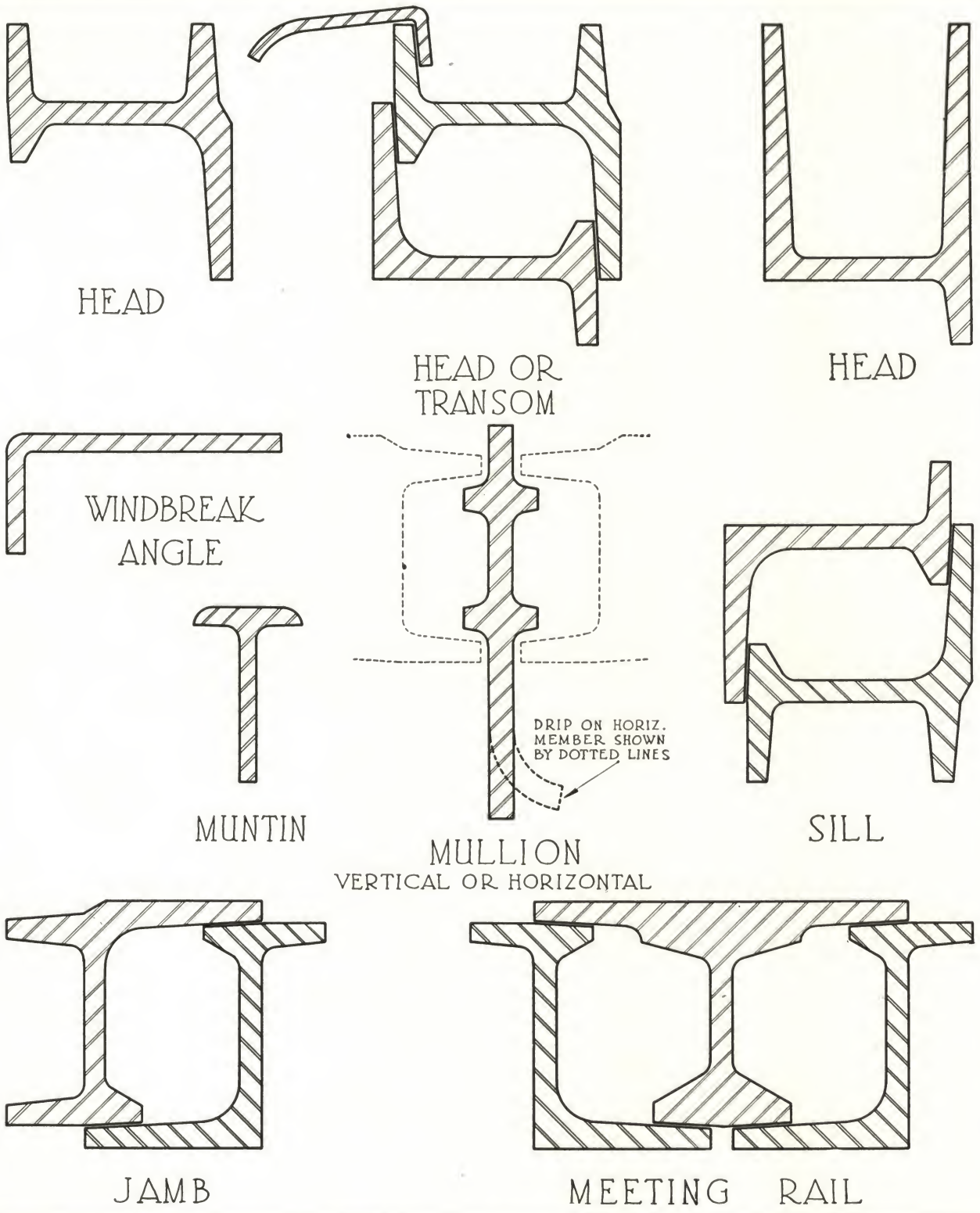
TRUSCON STEEL COMPANY Youngstown, Ohio	NON STOCK-TYPES AND SIZES **ARCHITECTURAL STEEL CASEMENTS** SERIES 15	PLATE No. **CA-2** NOVEMBER, 1934

NON~STOCK TYPES



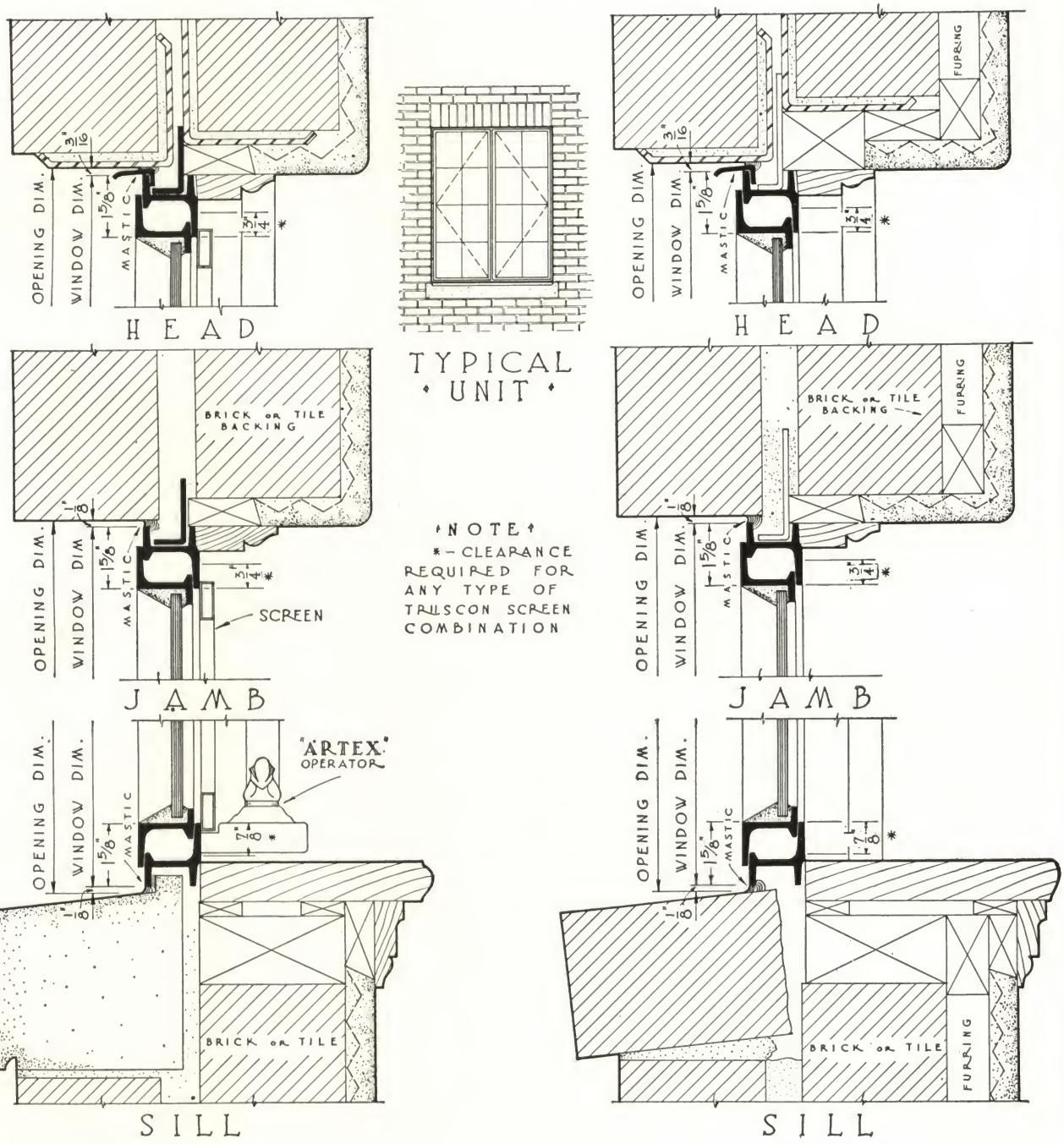
DIMENSIONS SHOWN ARE OPENING SIZES
FOR GLASS SIZES AND NOTES REFER TO PLATE CA-1

TRUSCON STEEL COMPANY Youngstown, Ohio	NON STOCK-TYPES AND SIZES **ARCHITECTURAL STEEL CASEMENTS** SERIES 15	PLATE No. **CA-3** NOVEMBER, 1934



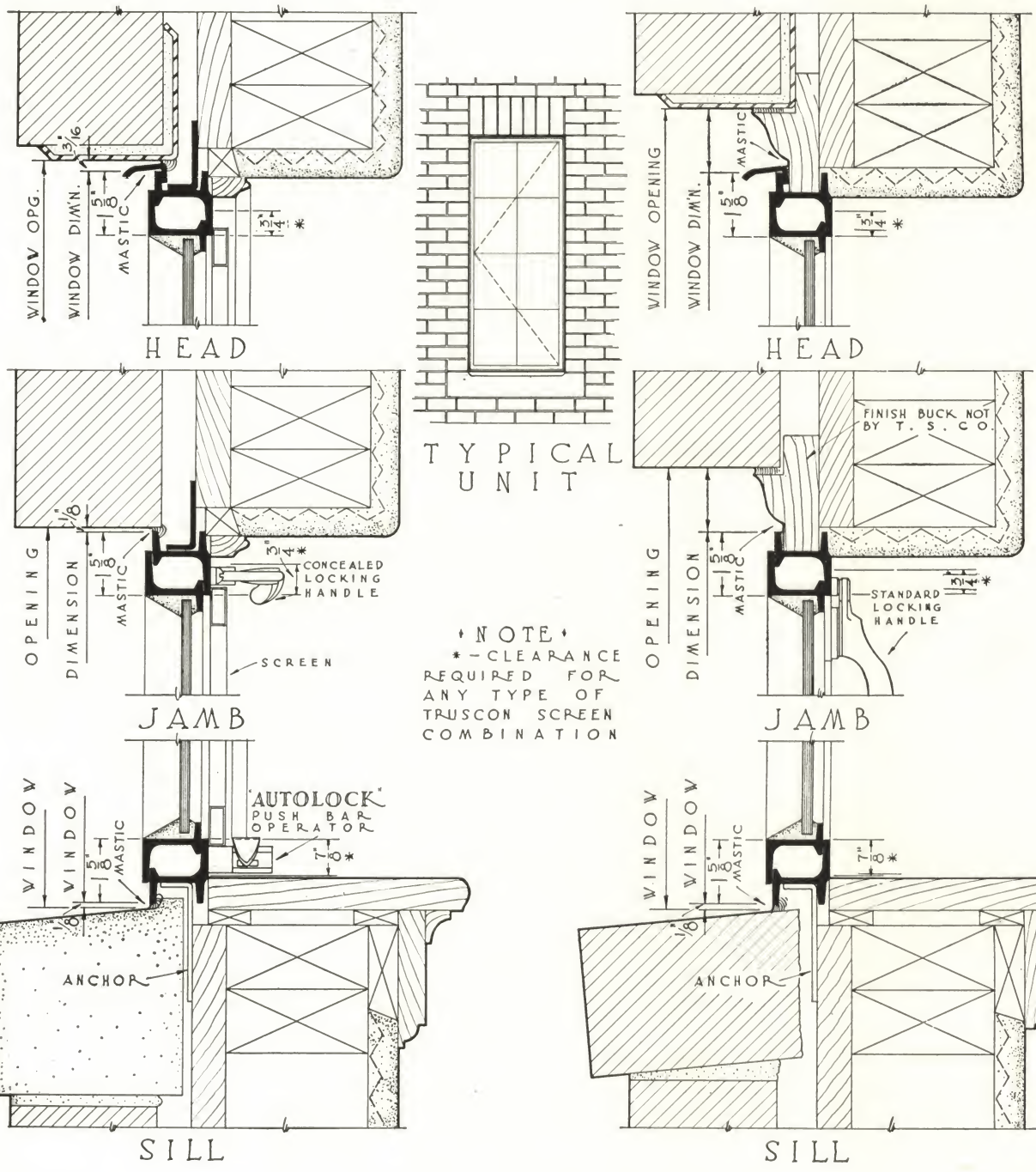
TRUSCON STEEL COMPANY Youngstown, Ohio	FULL SIZE SECTIONS **ARCHITECTURAL STEEL CASEMENTS** SERIES 15	PLATE No. **CA-4** OCTOBER, 1932

SOLID MASONRY DETAILS

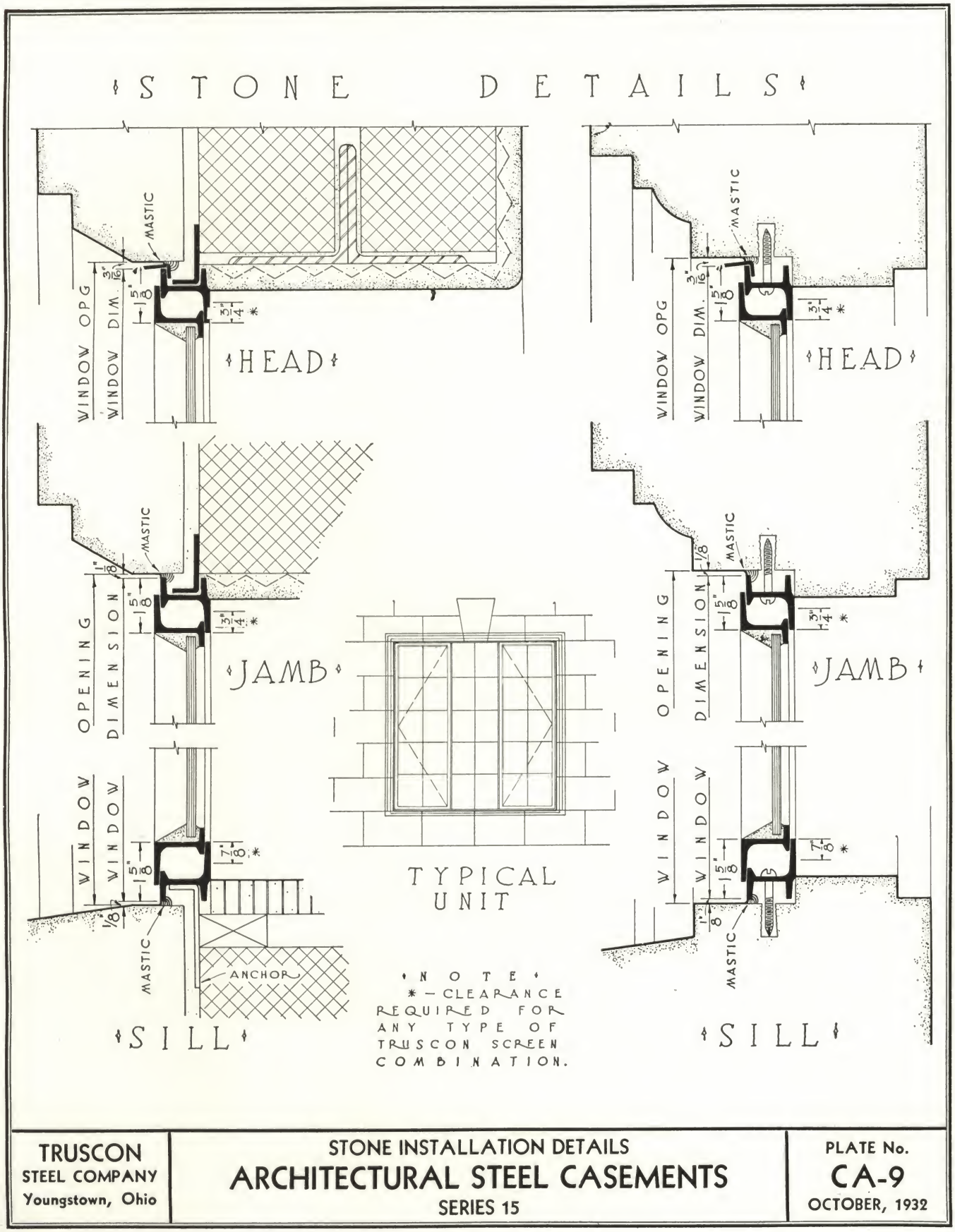


TRUSCON STEEL COMPANY Youngstown, Ohio	SOLID MASONRY INSTALLATION DETAILS **ARCHITECTURAL STEEL CASEMENTS** SERIES 15	PLATE No. **CA-7** NOVEMBER, 1934

BRICK VENEER DETAILS

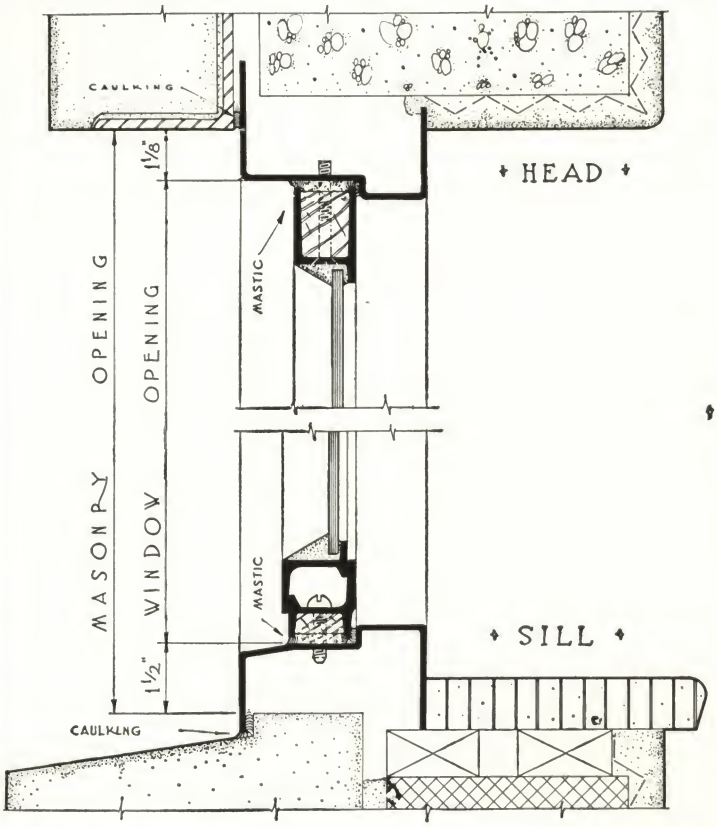


TRUSCON STEEL COMPANY Youngstown, Ohio	BRICK VENEER INSTALLATION DETAILS **ARCHITECTURAL STEEL CASEMENTS** SERIES 15	PLATE No. **CA-8** NOVEMBER, 1934

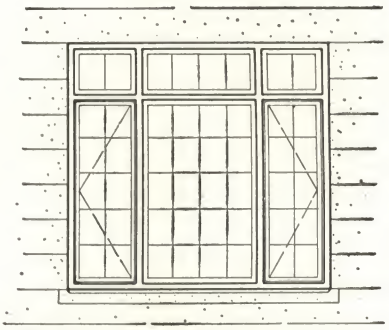


TRUSCON STEEL COMPANY Youngstown, Ohio	STONE INSTALLATION DETAILS ARCHITECTURAL STEEL CASEMENTS SERIES 15	PLATE No. CA-9 OCTOBER, 1932

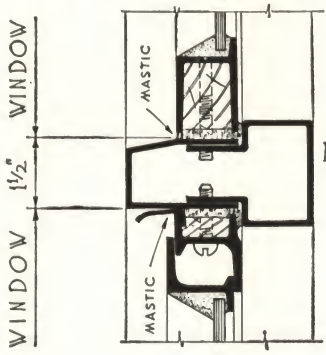
SUB - FRAME INSTALLATION



SECTION



TYPICAL ELEVATION

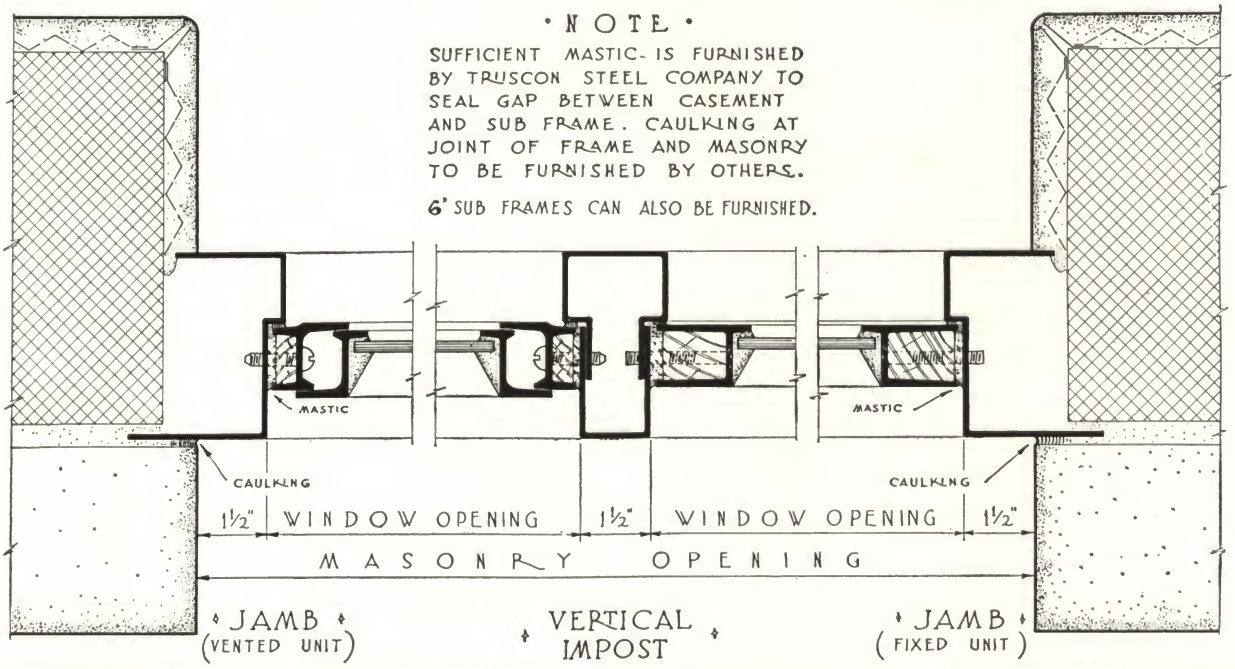


HORIZONTAL IMPOST

• NOTE •

SUFFICIENT MASTIC- IS FURNISHED BY TRUSCON STEEL COMPANY TO SEAL GAP BETWEEN CASEMENT AND SUB FRAME. CAULKING AT JOINT OF FRAME AND MASONRY TO BE FURNISHED BY OTHERS.

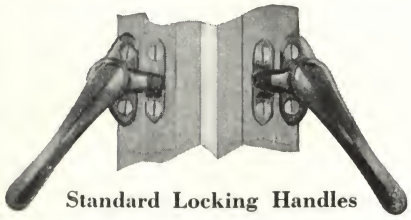
6' SUB FRAMES CAN ALSO BE FURNISHED.



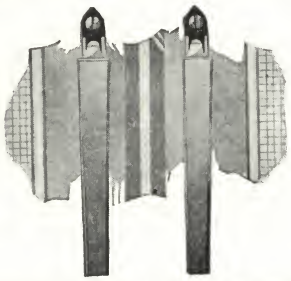
JAMB (VENTED UNIT) — VERTICAL IMPOST — JAMB (FIXED UNIT)

TRUSCON STEEL COMPANY Youngstown, Ohio	DETAILS OF 4" SUB-FRAME **ARCHITECTURAL STEEL CASEMENTS** SERIES 15	PLATE No. **CA-6** NOVEMBER, 1934

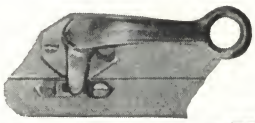
HARDWARE FOR ARCHITECTURAL AND PARAMOUNT CASEMENTS AND MONUMENTAL WINDOWS—*Series 15, 15C, 15P and 25*



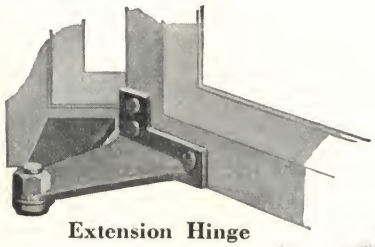
Standard Locking Handles



Screen Type Locking Handles

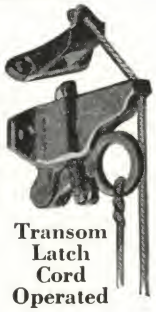


Locking Handle Pole Operated

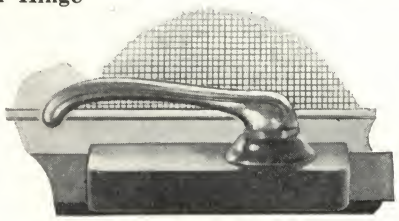


Extension Hinge

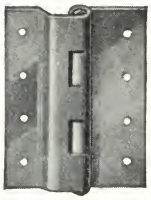
Transom Latch Pole Operated



Transom Latch Cord Operated

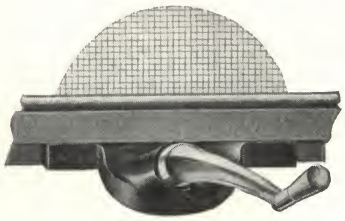


Artex Underscreen Operator

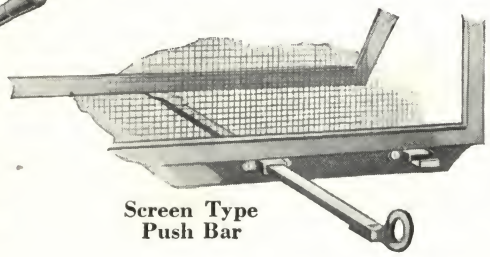


Butt Hinge

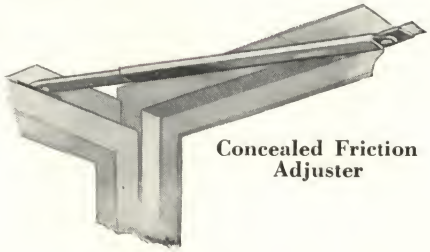
Two-Point Locking Device



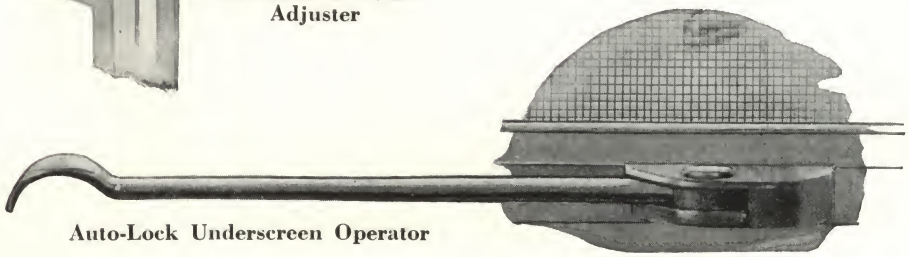
Worm and Gear Operator



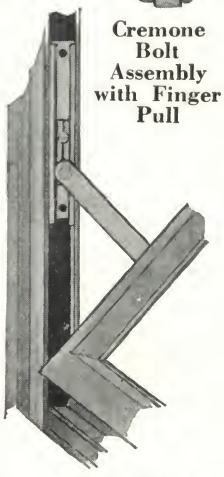
Screen Type Push Bar



Concealed Friction Adjuster

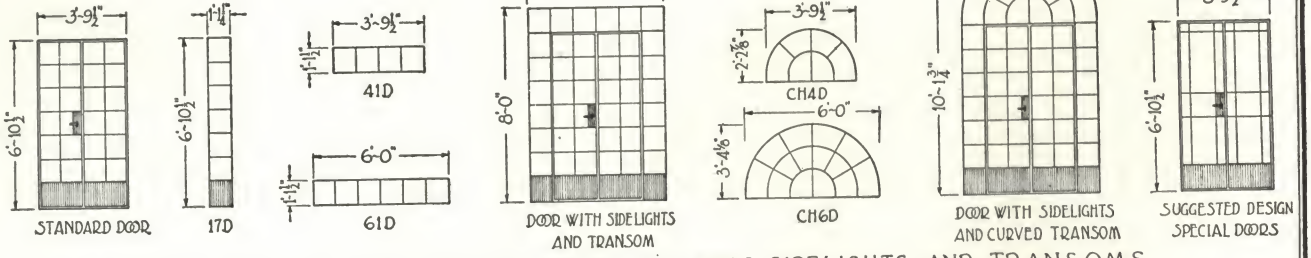


Auto-Lock Underscreen Operator

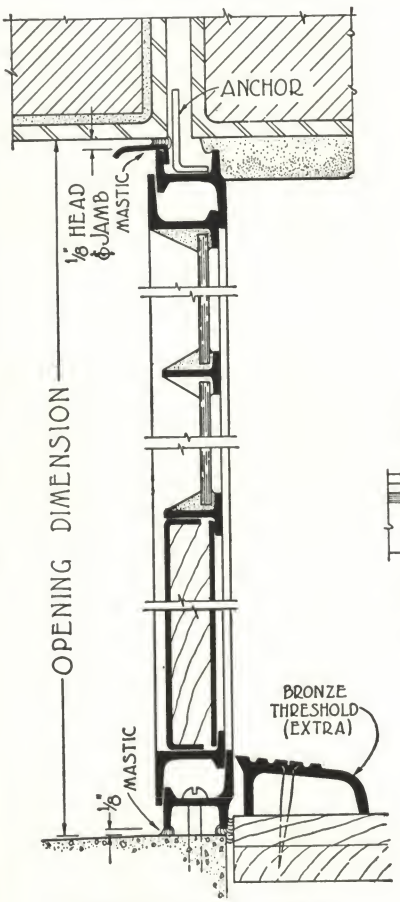


Cremone Bolt Assembly with Finger Pull

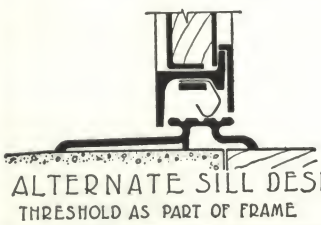
Concealed Side Arm



TYPICAL DESIGN AND ARRANGEMENT OF DOORS SIDELIGHTS AND TRANSOMS



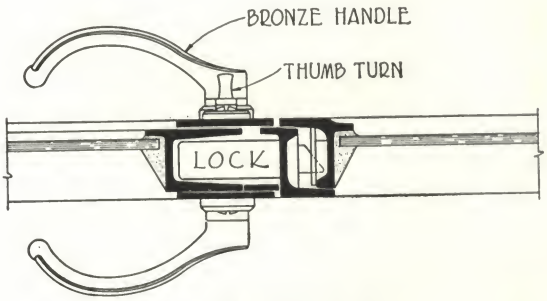
SWING OUT DOOR
(STANDARD)



ALTERNATE SILL DESIGN
THRESHOLD AS PART OF FRAME

STANDARD DOORS

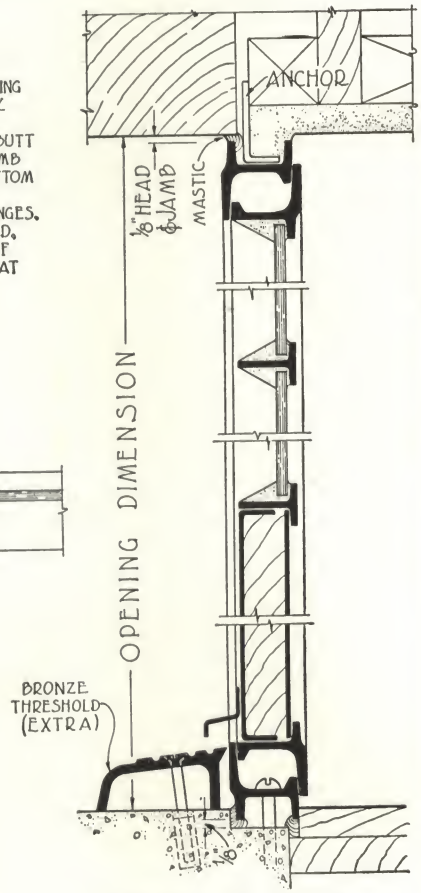
STANDARD DOORS SWING OUT ONLY ~ MUNTINS, EXCEPTING THE TWO HORIZONTAL MUNTINS FRAMING THE LOCK CASE, MAY BE OMITTED.
STANDARD DOORS ARE PROVIDED WITH THREE STEEL BUTT HINGES PER LEAF, MORTISE LOCK, HANDLES AND THUMB TURN ON ACTIVE LEAF, CONCEALED TOP AND BOTTOM BOLT ON INACTIVE LEAF.
CYLINDERS FOR MORTISE LOCK, BRONZE BUTT HINGES, BRONZE FRICTION ADJUSTERS, BRONZE THRESHOLD, DUMMY LOCK CASE AND HANDLES FOR INACTIVE LEAF AND PANIC BOLT HARDWARE WILL BE FURNISHED AT EXTRA COST.



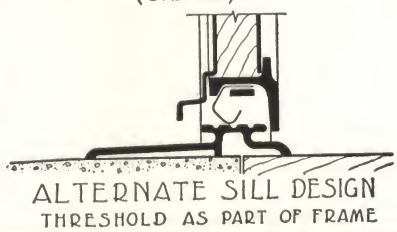
DETAIL AT MEETING RAIL
SHOWING LOCKING HANDLES
(STANDARD SWING OUT DOORS)

SPECIAL DOORS

SPECIAL DOORS, TO SWING IN OR OUT, ARE BUILT IN ANY SIZE UP TO 5'-0" WIDE × 7'-6" HIGH (FOR DOUBLE DOORS) OF INTERMEDIATE WEIGHT SECTIONS AND UP TO 6'-0" WIDE × 8'-0" HIGH (FOR DOUBLE DOORS) OF HEAVY WEIGHT SECTIONS.
SPECIAL DOORS MAY BE GLAZED INSIDE WITH GLAZING BEADS.
THE SAME HARDWARE IS AVAILABLE FOR SPECIAL DOORS AS THAT SPECIFIED FOR STANDARD DOORS.

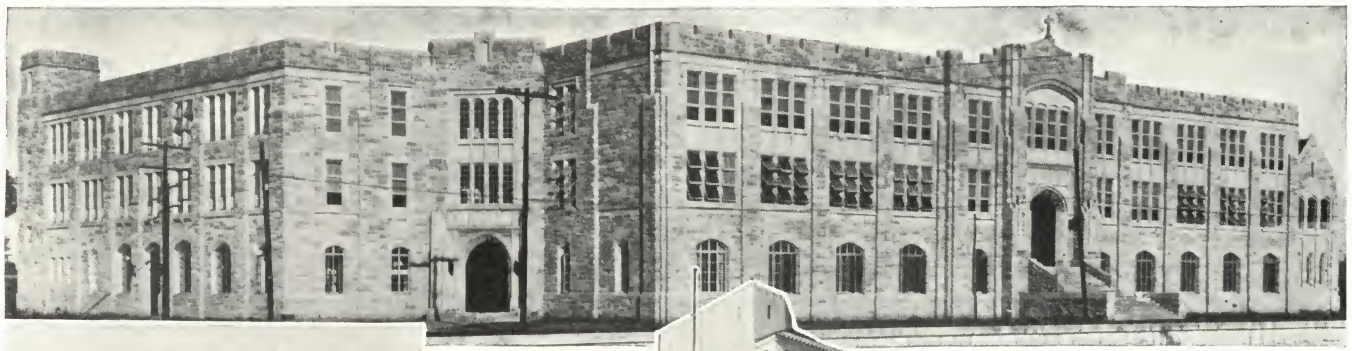


SWING IN DOOR
(SPECIAL)



ALTERNATE SILL DESIGN
THRESHOLD AS PART OF FRAME

TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD DETAILS ARCHITECTURAL CASEMENT DOORS SERIES 15	PLATE No. CA-10 NOVEMBER, 1935



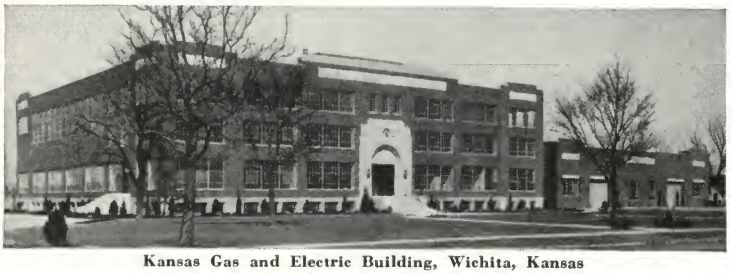
Marshall Field Building, Chicago, Ill.
GRAHAM, ANDERSON, PROBST AND WHITE, Architects
Truscon Steel and Aluminum Double-hung Windows

Xavier College, New Orleans, La.
WOGAN AND BERNARD, Architects
Truscon Donovan Awning Type Steel Windows

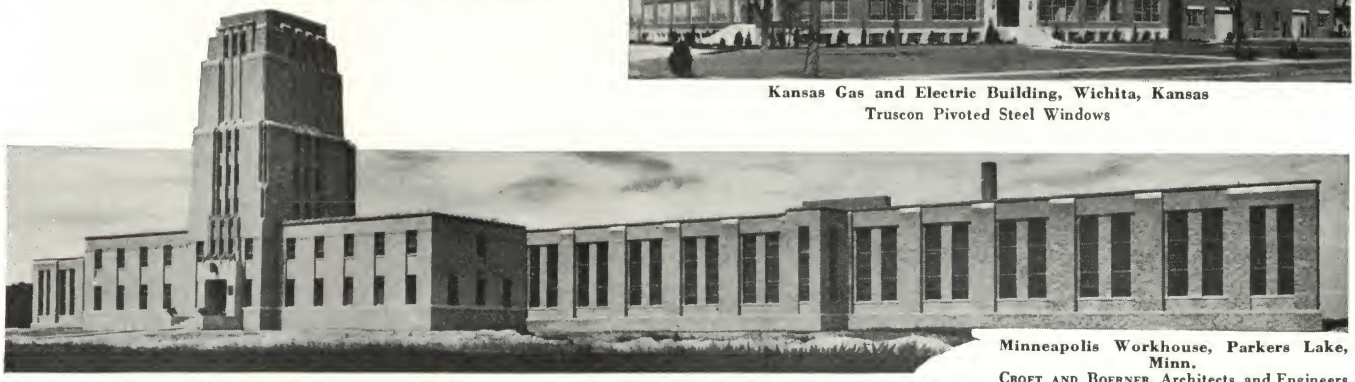
Atlanta Post Office, Atlanta, Ga.
A. TEN EYCK BROWN, Architect
Truscon Steel Double-hung Windows and Monumental Casements

Dr. J. S. Neviaser Residence, Chevy Chase, Md.
GEO. SANTMYER, Architect
Truscon Residence Casements

Tuskegee Normal and Industrial Institute, Tuskegee, Alabama
TAYLOR & PERSLEY, Architects



Kansas Gas and Electric Building, Wichita, Kansas
Truscon Pivoted Steel Windows



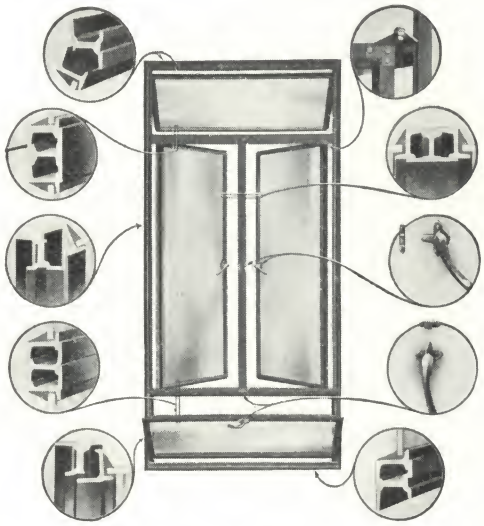
Minneapolis Workhouse, Parkers Lake, Minn.
CROFT AND BOERNER, Architects and Engineers
Truscon Detention Steel Windows

MONUMENTAL WINDOWS

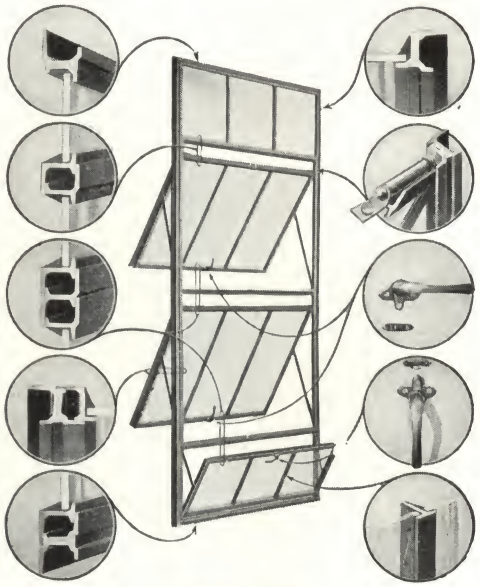
SERIES 15C AND 15P

MONUMENTAL Windows are suitable for use in hospitals, educational and public buildings, and other buildings of similar character.

Their appearance is in complete harmony with such buildings as they are constructed of casement sections, and employ casement hardware. They are extra heavy to withstand the constant usage encountered in such buildings.



Series 15C
Casement Type



Series 15P
Projected Type

SPECIFICATIONS (SERIES 15C AND 15P WINDOWS)

(1) General—All window openings shown on the drawings, unless otherwise specified, shall be fitted with Truscon Monumental Windows, either casement type Series 15C or projected type Series 15P, as shown, all as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution will be permitted without the written approval of the architect.

(2) Material—Truscon specifications, new billet, hot-rolled steel shall be used in the manufacture of all members.

(3) Construction—All units shall be square and true and constructed of sections not less than $1\frac{7}{16}$ in. deep.

(a) The *Outside Frame* shall be an unequal leg section, designed for $\frac{5}{8}$ in. anchorage on the outside leg and continuous from head to sill and jamb to jamb and shaped for double flat contact weathering not less than $\frac{3}{8}$ in. between sash and frame. Outside Frame Section may also be equal leg section with continuous fins. Each corner of sash and frames shall be electrically butt welded rigid and tight and ground smooth before assembly. The ventilators and frame shall be made perfectly straight and true to insure perfect weathering and ease of operation.

(b) *Muntins*, where required, shall be a specially designed "T" bar section and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted.

(c) All *Stiles, Rails, Frames and Muntins* shall be prepared for outside putty glazing with clips. (See note.)

(d) *Series 15C Side Hinged Swing Leaves* shall swing out unless otherwise specified and shall be equipped with Truscon design, friction type, bronze bushed hinges designed to hold swing leaf open in any desired position. Series 15C transoms and sill ventilators shall be of the projecting type. (See note.) A continuous drip shall be provided for all side hinged leaves.

(e) *Series 15P Ventilators* shall be of the projecting type opening down and outward or up and inward as specified. Each ventilator shall be balanced on two $\frac{3}{16}$x1 in. high carbon steel supporting arms attached to frame and ventilator by special shoulder rivets having a bronze flange bushing. Each ventilator shall be equipped with vertical sliding brass friction shoe at each jamb.

(4) Hardware—

NON SCREEN TYPE

(a) All *Hardware* shall be bronze, Old English finish.

(b) For *Side Hinged Swing Leaves* up to and including 5 ft. in height, a bronze cam acting locking handle and bronze strike shall be furnished.

For *Side Hinged Swing Leaves* over 5 ft. in height or when center line of swing leaf is 6 ft. 3 in. or more from the floor, bronze double locking device and bronze strikes shall be furnished.

For *Double Vented Units* with clear opening (no meeting rail), bronze cremone bolt hardware shall be furnished.

(c) For *Projected Ventilators* a bronze cam acting locking handle and, where necessary, a bronze pole ring shall be furnished as standard. Where desired and specified, bronze spring latch, either pole or cord operated, shall be furnished.

SCREEN TYPE

(d) *Screen Type Hardware* shall be fully automatic and positive and shall control the swing leaf independently of the screen.

(e) Standard screen type hardware for side hinged swing leaves shall consist of either Autolock or Artex Underscreen Operator and concealed latch locking handle. Autolock Operator shall have a black finish case and solid bronze Old English finish bar. Artex Operators shall have black finish case and Old English bronze finish handle. Concealed latch locking handle shall be solid bronze Old English finish. Worm drive operators in solid bronze Old English finish can be furnished when specified.

(f) Standard screen type hardware for *down and outward projecting* ventilators shall consist of heavy bronze Old English finish push arm operating through the frame or intermediate bar sections.

Ventilators projecting up and inward do not require screen type hardware.

(5) Painting—Casements shall be given one prime coat of grey mineral paint at factory before shipment.

(6) Glazing—All casements shall be glazed on the outside with glazing clips (see note).

(7) Erection—(a) Each unit shall be set plumb and true in the opening, securely wedged and held in alignment during construction.

After windows have been placed in opening and before they are glazed, the ventilator shall be carefully adjusted.

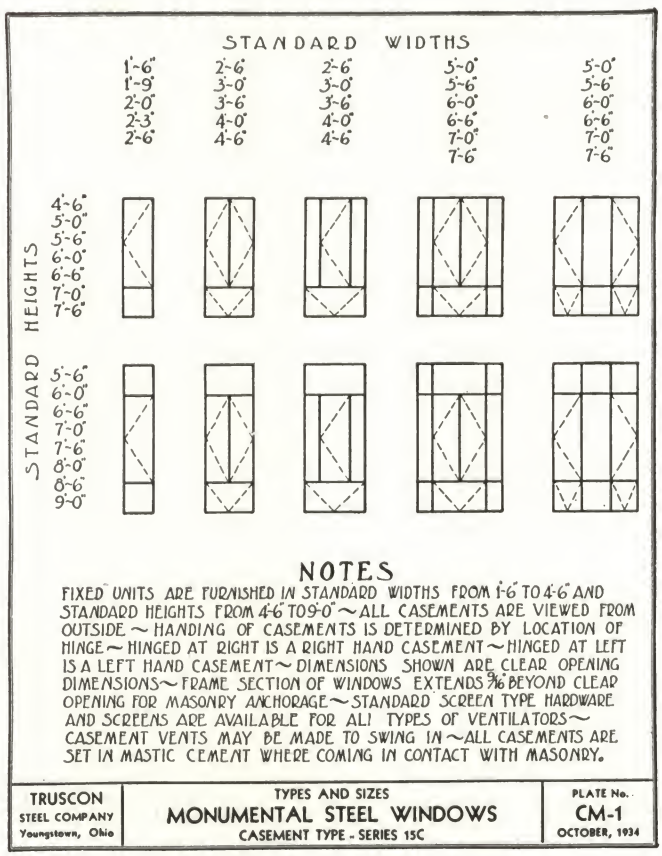
(b) Mastic in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

Notes: Windows may be inside bead glazed with solid section, hot-rolled glazing beads if desired and so specified.

When specified, Series 15C Monumental Casements can be furnished to "open in."

UNDERWRITERS' LABEL

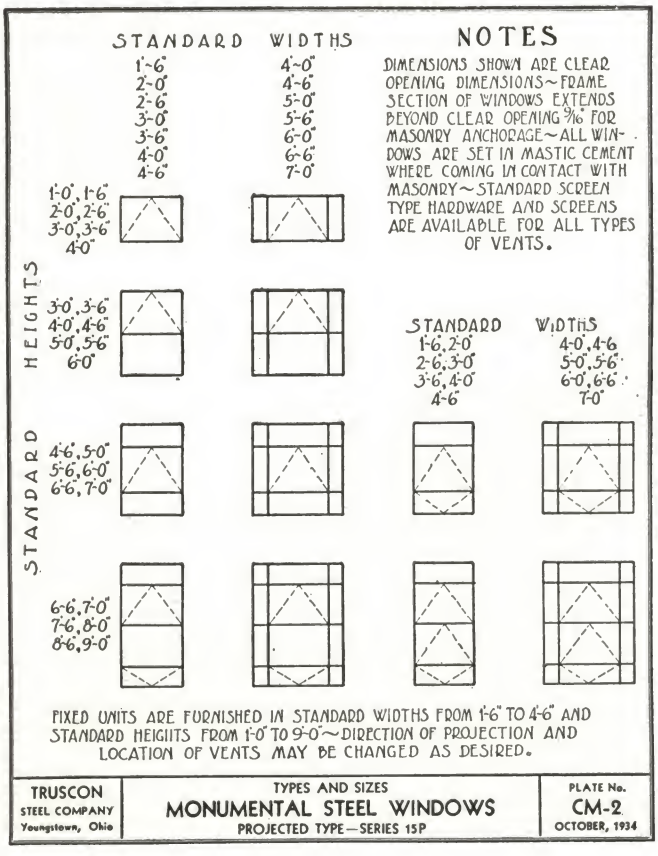
Underwriters' label of approval may be specified for all standard sizes shown, not exceeding 5 ft. 0 in. in width provided glass lights, if outside putty glazing is used, do not exceed 125 sq. in., using standard muntin bar or 350 sq. in., using extra heavy muntin bar. If inside bead glazing is used, glass sizes are limited to 155 sq. in.



NOTES

FIXED UNITS ARE FURNISHED IN STANDARD WIDTHS FROM 1'-6" TO 4'-6" AND STANDARD HEIGHTS FROM 4'-6" TO 9'-0" ~ ALL CASEMENTS ARE VIEWED FROM OUTSIDE ~ HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE ~ HINGED AT RIGHT IS A RIGHT HAND CASEMENT ~ HINGED AT LEFT IS A LEFT HAND CASEMENT ~ DIMENSIONS SHOWN ARE CLEAR OPENING DIMENSIONS ~ FRAME SECTION OF WINDOWS EXTENDS 5/16" BEYOND CLEAR OPENING FOR MASONRY ANCHORAGE ~ STANDARD SCREEN TYPE HARDWARE AND SCREENS ARE AVAILABLE FOR ALL TYPES OF VENTILATORS ~ CASEMENT VENTS MAY BE MADE TO SWING IN ~ ALL CASEMENTS ARE SET IN MASTIC CEMENT WHERE COMING IN CONTACT WITH MASONRY.

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES MONUMENTAL STEEL WINDOWS CASEMENT TYPE - SERIES 15C	PLATE No. CM-1 OCTOBER, 1934



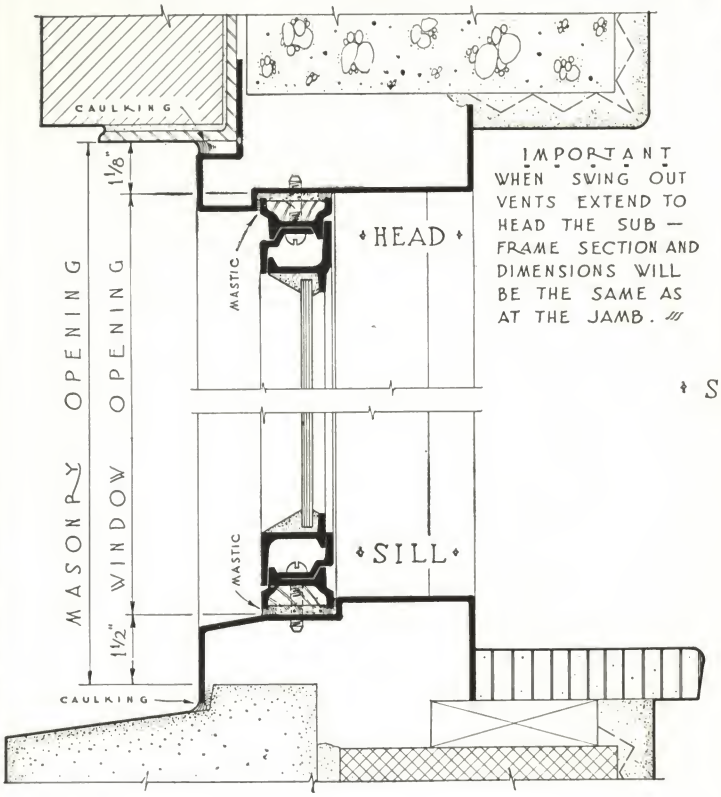
NOTES

DIMENSIONS SHOWN ARE CLEAR OPENING DIMENSIONS ~ FRAME SECTION OF WINDOWS EXTENDS 5/16" BEYOND CLEAR OPENING FOR MASONRY ANCHORAGE ~ ALL WINDOWS ARE SET IN MASTIC CEMENT WHERE COMING IN CONTACT WITH MASONRY ~ STANDARD SCREEN TYPE HARDWARE AND SCREENS ARE AVAILABLE FOR ALL TYPES OF VENTS.

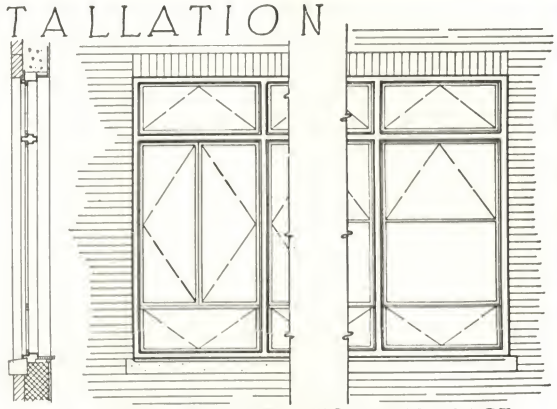
FIXED UNITS ARE FURNISHED IN STANDARD WIDTHS FROM 1'-6" TO 4'-6" AND STANDARD HEIGHTS FROM 1'-0" TO 9'-0" ~ DIRECTION OF PROJECTION AND LOCATION OF VENTS MAY BE CHANGED AS DESIRED.

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES MONUMENTAL STEEL WINDOWS PROJECTED TYPE—SERIES 15P	PLATE No. CM-2 OCTOBER, 1934

SUB - FRAME INSTALLATION

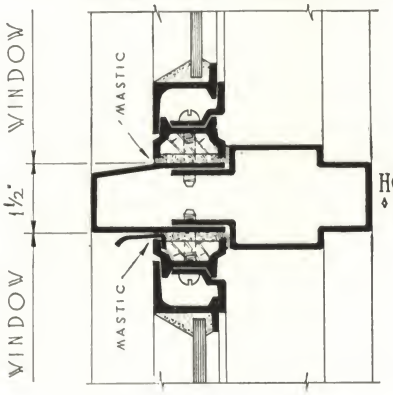


IMPORTANT
WHEN SWING OUT VENTS EXTEND TO HEAD THE SUB — FRAME SECTION AND DIMENSIONS WILL BE THE SAME AS AT THE JAMB. ///

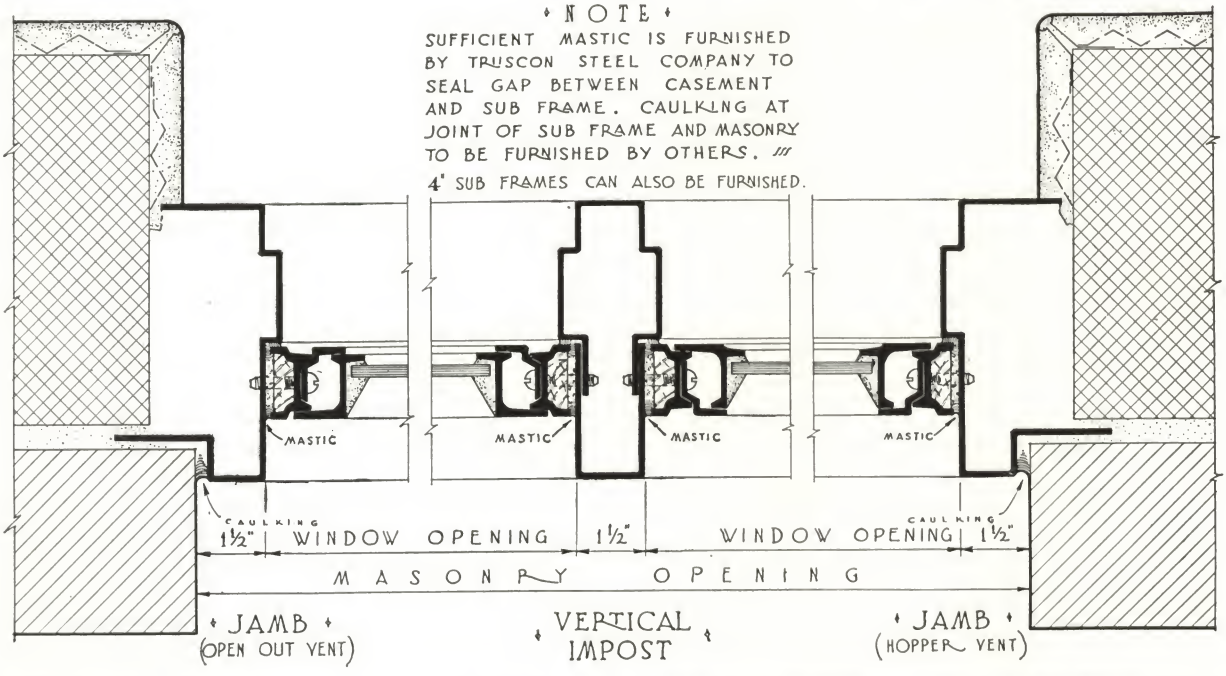


SECTION

PART ELEVATIONS WITH CASEMENT AND PROJECTED SASH.

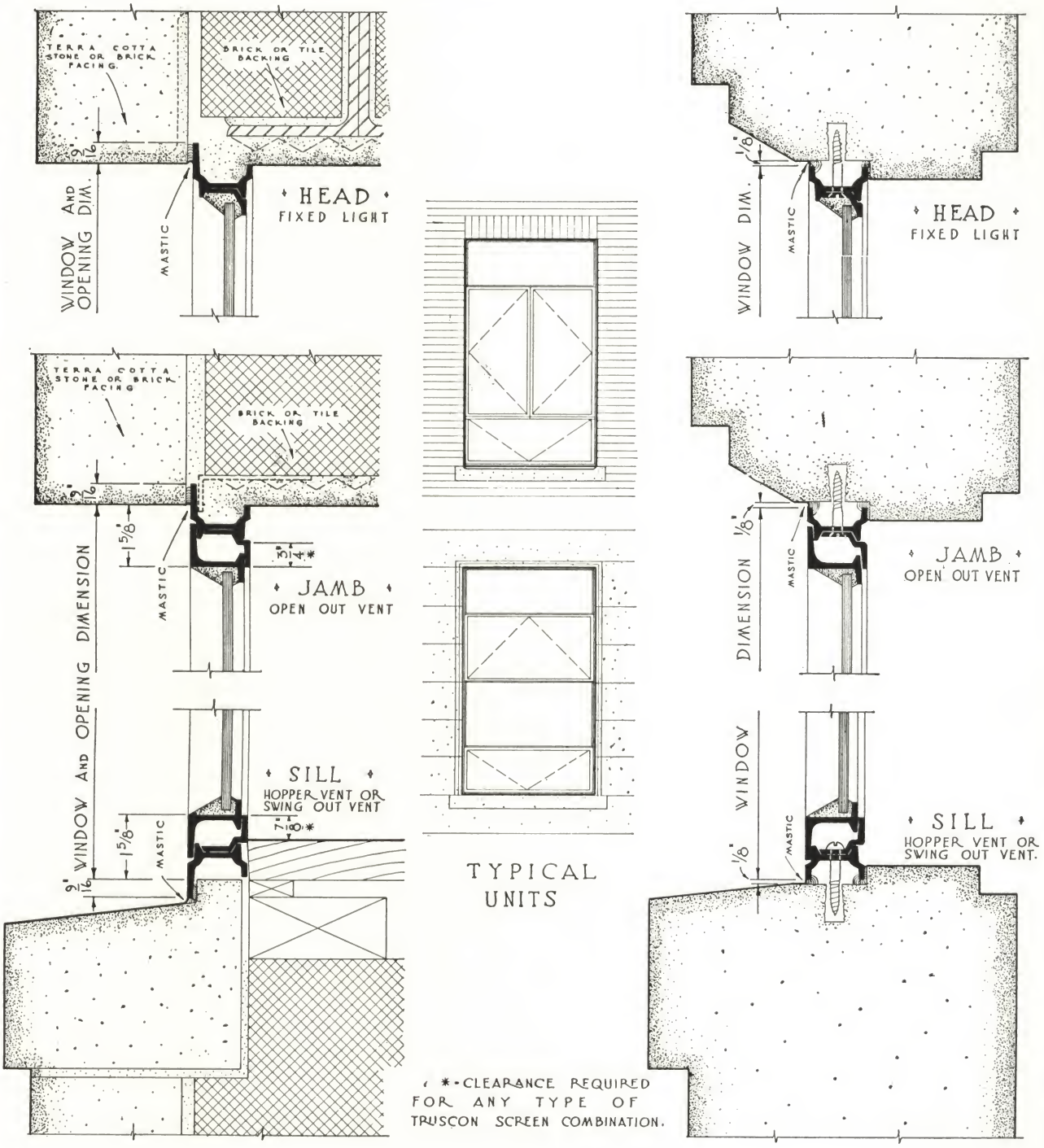


NOTE
SUFFICIENT MASTIC IS FURNISHED BY TRUSCON STEEL COMPANY TO SEAL GAP BETWEEN CASEMENT AND SUB FRAME. CAULKING AT JOINT OF SUB FRAME AND MASONRY TO BE FURNISHED BY OTHERS. ///
4" SUB FRAMES CAN ALSO BE FURNISHED.

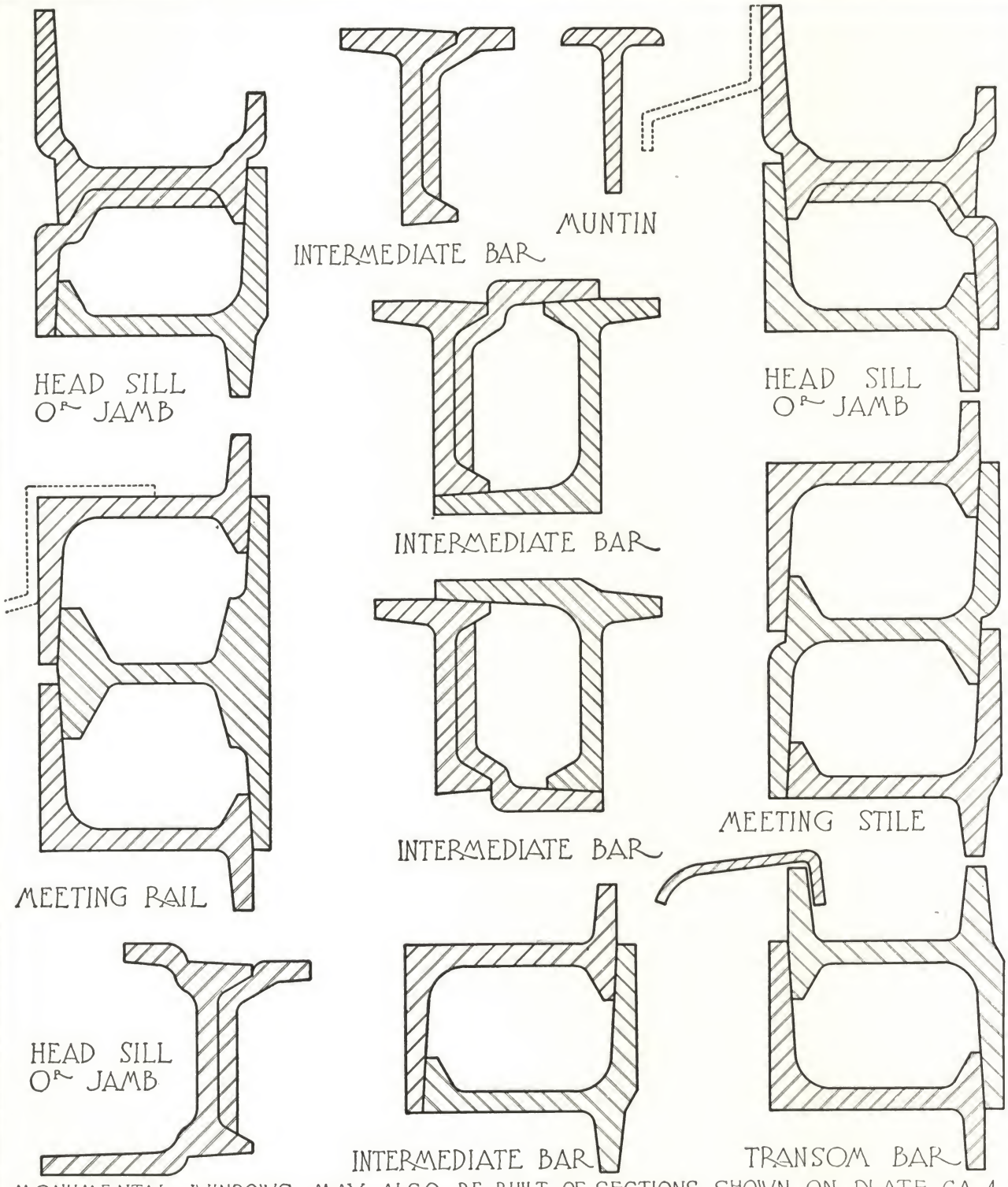


TRUSCON STEEL COMPANY Youngstown, Ohio	DETAILS OF 6" SUB-FRAME **MONUMENTAL STEEL WINDOWS** CASEMENT AND PROJECTED TYPES (Series 15C and 15P)	PLATE No. **CM-4** NOVEMBER, 1934

SOLID MASONRY CONSTRUCTION



TRUSCON STEEL COMPANY Youngstown, Ohio	MASONRY INSTALLATION **MONUMENTAL STEEL WINDOWS** CASEMENT AND PROJECTED TYPES (SERIES 15C AND 15P)	PLATE No. **CM-5** NOVEMBER, 1934



TRUSCON STEEL COMPANY Youngstown, Ohio	FULL SIZE SECTIONS **MONUMENTAL STEEL WINDOWS** CASEMENT AND PROJECTED TYPES (Series 15C and 15P)	PLATE No. **CM-3** NOVEMBER, 1934

PARAMOUNT CASEMENTS

SERIES 25

WHERE architectural treatment and ventilation requires exceptionally large swing leaves, Paramount Casements, Series 25, will meet the most exacting architectural specifications.

CONDENSED SPECIFICATIONS

(1) General—All openings shall be equipped with Paramount Casement Windows as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio.

(2) Construction—(a) Windows shall be custom made and of type, size and design to swing either in or out, as shown on the drawing.

(b) *Major Members* shall be not less than 1½ in. in depth and shall be hot-rolled from new billet steel. The combined weight of frame and swing leaf members shall be not less than 4 lbs. per linear foot.

(c) *All corners* of swing leaves and frames shall be mitered and electrically butt welded and all exposed surfaces ground smooth. Double contact of not less than ⅜ in. shall be provided for weathering on all windows where swing leaves contact frame members.

(3) Glazing—Windows shall be furnished with glazing clips for outside putty glazing. When otherwise specified, windows shall be fitted with a solid moulded steel glazing stop for inside glazing. Glazing stops shall be carefully fitted to each light and attached with bronze screws.

(4) Hardware—(a) *Unattached Hardware* shall be solid bronze, Old English finish of Truscon standard design. Standard screen type hardware shall be furnished and windows prepared for same when so specified *(illustrated on page 35)*. Unattached hardware shall be packed separately and shipped with windows.

(b) *Swing Leaves* shall be provided with standard extension cleaning hinges, either friction or free swinging types; or with butt hinges, at the option of the architect. All hinges are so designed as to have 100% bronze to steel contact on all pivot points. Windows shall be provided for friction or stay-bar adjustor where free swinging hinges are specified.

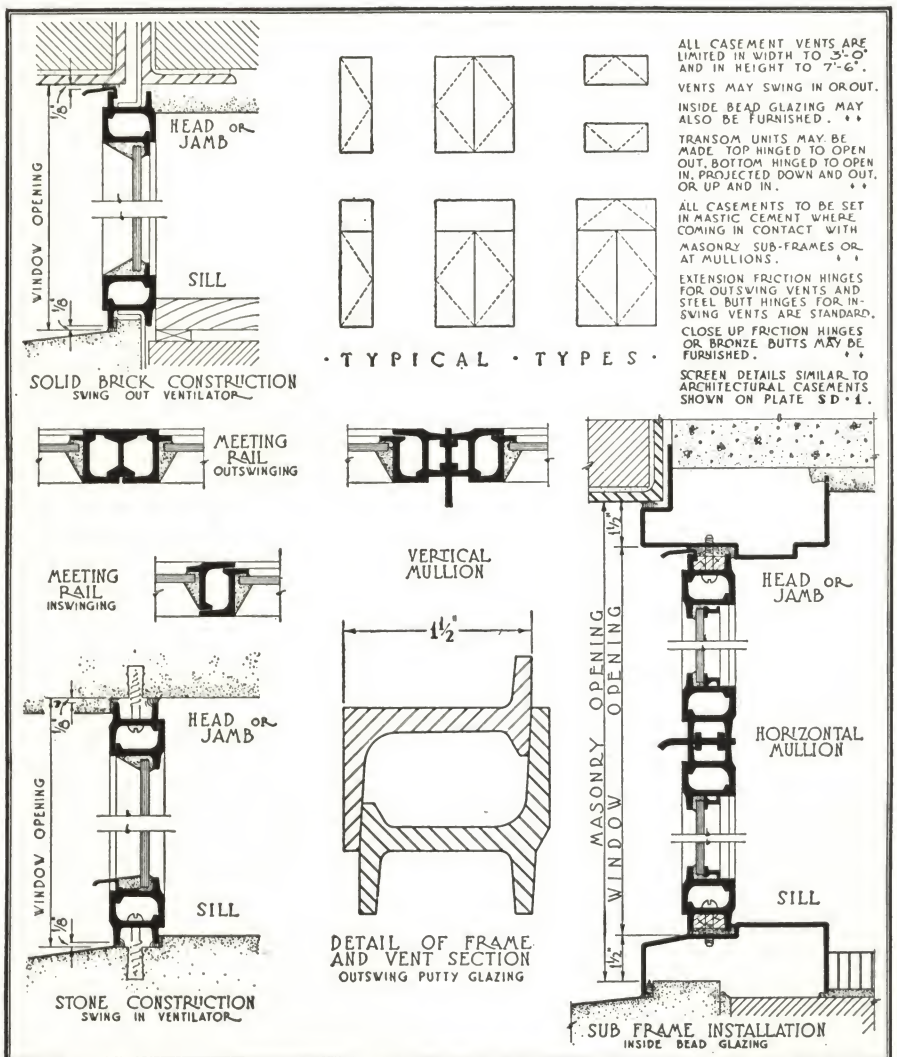
(5) Painting—Windows after fabrication shall be given one protective coat of standard Truscon paint.

(6) Erection—All windows shall be set plumb and true in their respective openings and properly adjusted. All contacts at mullion assemblies and where window frames meet collateral construction shall be made weather-tight with Truscon mastic cement. All hardware shall be applied in accordance with manufacturer's instructions. (It is recommended that the manufacturer shall erect and adjust the windows. The Erection Division of the TRUSCON STEEL COMPANY will contract to furnish this service.)

Frame members of windows shall be so designed that they can be readily installed in Truscon standard design steel sub frames erected by others. Frame members shall also be prepared to accept standard fins so that windows may be built-in with the construction.

UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for units not exceeding 6 ft. 6 in. in width and height and providing side hinged vents do not exceed 2 ft. 6 in. x 6 ft. 0 in. and other vents 5 ft. 0 in. x 2 ft. 6 in. Glass lights are also limited to 350 square inches if putty glazed and 155 square inches if bead glazed.



TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD DETAILS PARAMOUNT STEEL CASEMENTS SERIES 25	PLATE No. CP-1 NOVEMBER, 1934

PROJECTED WINDOWS

DESIGNED for appearance as well as practicability. The architect has a wide range of types to choose from, thereby enabling him to use standard types and take advantage of their economy.

The outside frame is a solid heavy channel, giving great strength. Rigidity in the ventilator is secured by the use of a heavy solid angle section mortised and tenoned and also welded at the corners. The ventilator frame is rolled with integral baffle, similar in design used on highest quality casements.

Solid bronze hardware is standard for these windows and the quality and design are in keeping with the word "Architectural."

Windows with inside glazing angles are standard. Windows arranged for outside glazing with putty can be furnished at a saving in cost.

Projecting ventilators permit easy cleaning from the inside.

Weather-tightness is assured by the rigid construction of the window and the Truscon double contact weathering.

CONSTRUCTION DETAILS

(1) Forged Brass Sliding Pivot Friction Shoe—Shoe mounted on $\frac{1}{8}$ in. flat cadmium plated spring steel 1x4$\frac{1}{8}$ in. securely riveted to stiles of vent.

(2) Bronze Pole Hook Ring—Allowing operation of out-swinging ventilators with window pole.

(3) Brass Bushed Pivoted Arms—$\frac{3}{16}$x1 in. supporting arms for ventilator are concealed when ventilator is closed.

(4) Locking Handle and Strike for Outward Projecting Vents—Artistically designed handle and strike plate of solid bronze close and lock the window securely.

(5) Weathering Section at Sill—Weather-tightness at sill of ventilator is assured when window is closed by large double contact at this point.

(6) Locking Handle and Strike for Inward Projecting Vents—Solid bronze.

(7) Weathering Section at Meeting Rail—Proper weathering contact through sill of out-swinging and head of in-swinging ventilators at all times when vent is closed.

(8) Ventilator Frame—Rigid angle section, mortised and tenoned, electrically welded.

(9) Weathering Section at Jambs—Double contact at jambs, sills and head of ventilator, completes proper weathering for entire ventilator.

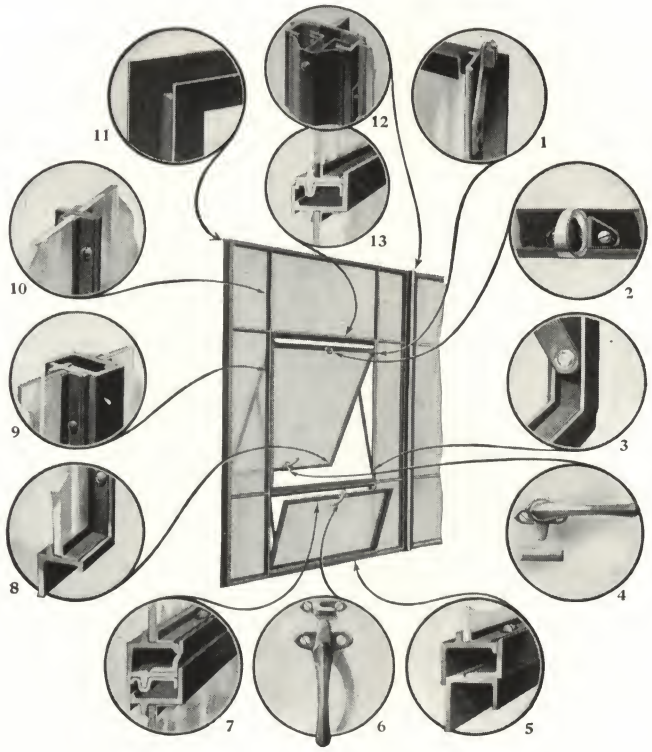
(10) Metal Glazing Angles—Glass is bedded in Truscon Steel Window putty and held in place with glazing angles attached to sash with brass bolts.

(11) Corners—Heavy frame members of unequal leg channels are mortised and tenoned, electrically welded.

(12) Vertical Mullions—Exterior Tee Bar to give necessary rigidity, with pressed metal interior cover to give pleasing appearance.

(13) Weathering Section at Head—Head of out-swinging ventilator provides contact at two points.

ARCHITECTURAL TYPE



CONDENSED SPECIFICATIONS

(1) General—All windows so indicated on the plans and elevations and called for in these specifications shall be the Architectural Projected Type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio.

(2) Construction—All joints shall be mortise and tenoned, and air-hammer riveted.

(a) *Corners of all ventilators* and sash shall be welded.

(b) The *intersection* of horizontal and vertical muntins shall have a dovetail miter, rigidly interlocking the bars.

(c) No *excess metal or projecting surfaces* shall be permitted where muntin bars intersect.

(d) *Muntin bars* except where ventilators occur shall be continuous from head to sill and from jamb to jamb.

(e) *Ventilators* shall have double contact weathering on all four sides.

(f) *The sliding pivots* shall be constructed of forged brass.

(g) *The outside section* of the window shall be a heavy, solid hot-rolled new billet steel channel (210-A or 210-B section).

(h) The *side of the window* frame shall act as a guide for the sliding pivot with no recess or slot.

(j) *Uniform tension* to hold ventilators in any position by the use of springs applied between sliding pivot and ventilator.

(k) There shall be *two heavy supporting arms* attached to the ventilator and frame designed to be concealed when ventilator is closed. The rivet holes in supporting arms shall have brass bushing.

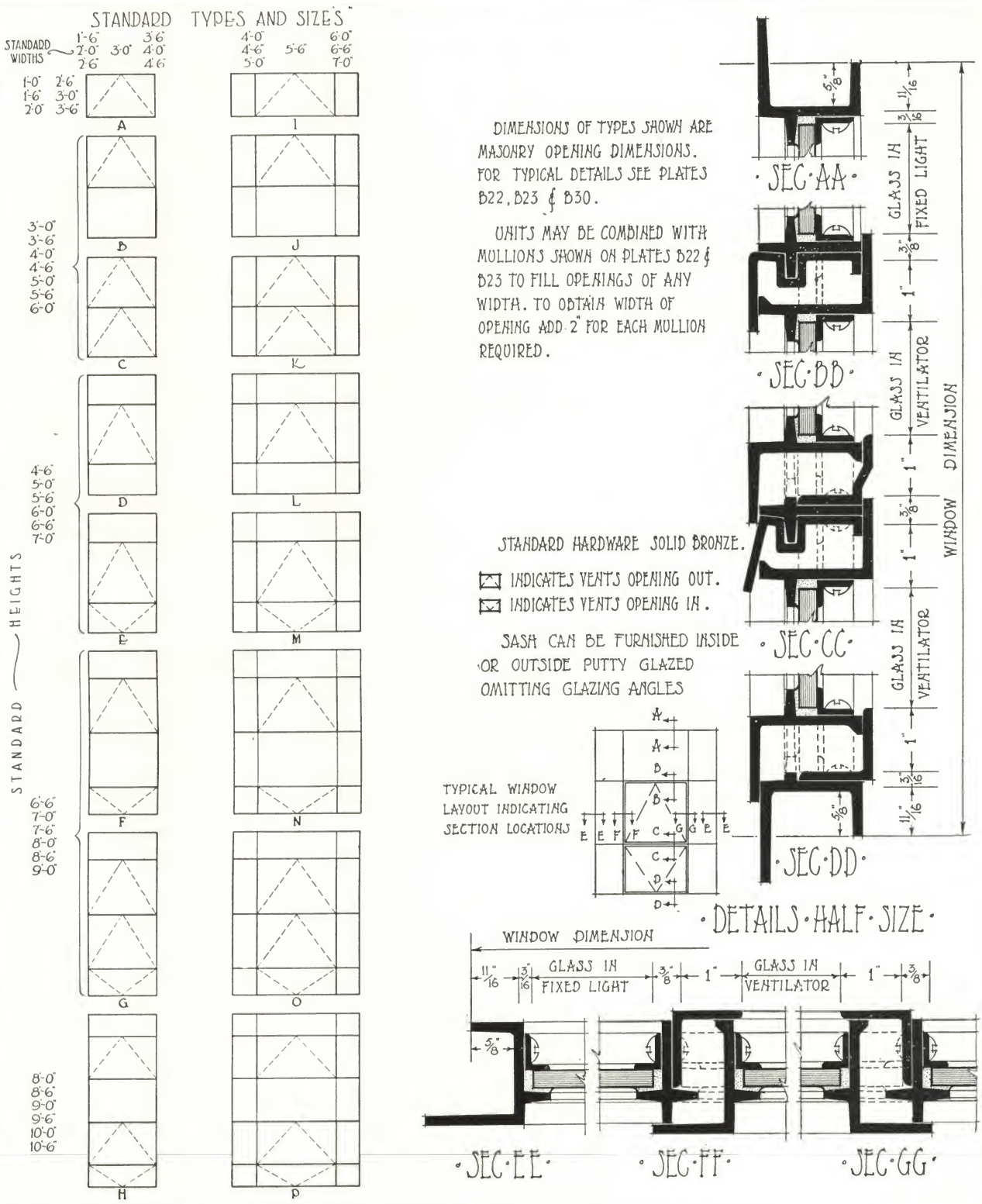
(l) *Ventilators Projected Out or In* shall have no part of ventilator projecting beyond the normal plane of the windows.

(3) Finished Hardware—Shall be bronze throughout.

(4) Painting—All windows shall be given one coat of protecting paint before shipment.

UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for all standard sizes shown and special sizes up to 7 ft. width by 12 ft. in height. *Windows must be inside angle glazed.* Maximum glass size is 350 square inches.



TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD TYPES — SIZES — DETAILS ARCHITECTURAL PROJECTED STEEL WINDOWS	PLATE No. B-21 OCTOBER, 1935

PROJECTED WINDOWS

WHERE neat design and economy are the keynote of the construction, architects will appreciate the quality, appearance, performance and low cost of these windows. They are widely used in buildings where low cost is essential. The projected feature is especially valuable when ventilation depends upon the natural clearing off of vapor, smoke and stale air. The tilted ventilator acts as a deflector of the elements and can be kept open in all kinds of weather. Direct drafts are eliminated and a continuous change of air is obtained. Projecting ventilators make possible ready cleaning from the inside.

Because of the similarity between the appearance of the Commercial Projected and Pivoted Windows, the Projected Windows can be used in the office section of an industrial plant with complete conformity to the general design.

Thirty-two standard types of Commercial Projected Window, as shown on page 46 are available in either 12x18 in. or 14x20 in. glass size, many of which are carried in warehouse stocks.

SCREENS

Ventilators projecting inwardly with fixed flat screens on outside are the most practicable and economical. However, top hinged screens can be furnished for ventilators projecting outwardly or fixed screens can be used in connection with underscreen push bar hardware.

EXPLOSION HARDWARE

Explosion type hardware conforming to specifications of Associated Mutual Fire Insurance Company can be furnished at unincreased cost over standard hardware for outwardly opening projected ventilators. This hardware operated either by pole or chain allows the ventilator to open automatically in case of explosion.

CONDENSED SPECIFICATIONS

(1) General—All windows so indicated on the plans and elevations and called for in these specifications shall be the Commercial Projected type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio.

(2) Construction—(a) All joints shall be mortised and tenoned and air-hammer riveted.

(b) The intersection of *Horizontal and Vertical Muntins* shall have a dovetail mitre, rigidly interlocking the bars.

(c) No *Excess Metal* or projecting surfaces shall be permitted where muntin bars intersect.

(d) *Muntin Bars*, except where ventilators occur, shall be continuous from head to sill and from jamb to jamb.

(e) *Ventilators* shall have double contact weathering on all four sides.

(f) The *Sliding Pivot* shall be constructed of forged brass.

(g) The side of the window frame shall act as a *Guide* for the sliding pivot, and shall be constructed without recess or slot.

(h) *Uniform Tension* to hold ventilator in any desired position shall be gained by the use of a spring applied between sliding pivot and ventilator.

(j) There shall be two heavy *Supporting Arms* attached to the ventilator and frame, designed to be concealed when ventilator is closed. The rivet holes in supporting arms shall have brass bushings.

(k) *Ventilators Projected Out*, when open, shall have no part of the ventilator projecting inside the normal plane of the window.

(l) *Ventilators Projected In* shall not project outside the normal plane of the window.

(3) Finished Hardware—Shall be malleable iron, cadmium plated.

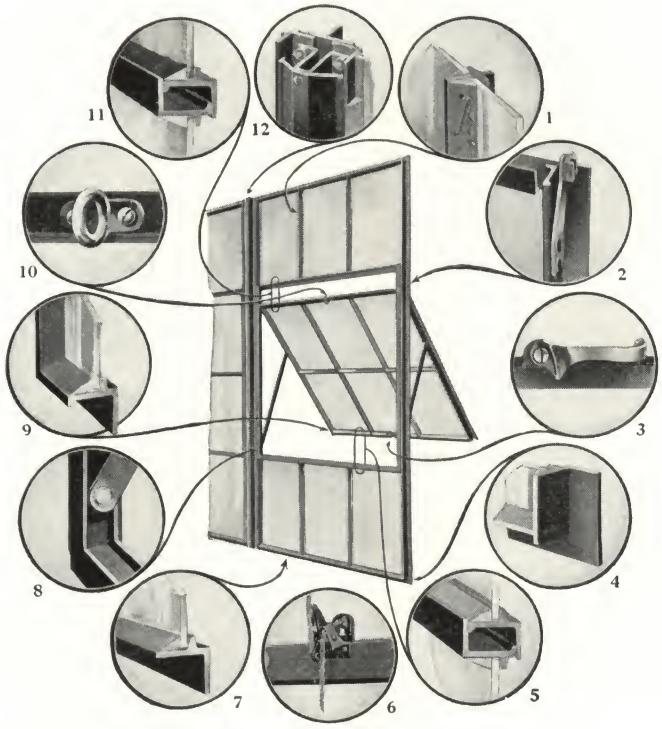
Note: Bronze hardware can be furnished if required.

(4) Painting—All windows shall be given one coat of Truscon Protective Paint before shipment.

UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for all standard sizes shown and special sizes up to 7 ft. 0 in. in width by 12 ft. 0 in. in height, *must be inside angle glazed.* Maximum glass size is 350 square inches.

COMMERCIAL TYPE



CONSTRUCTION DETAILS

(1) Glazing—Glass bed and face puttied and held in place with clips; staggered holes and flexible clips allow various thicknesses of glass. Use steel window putty. Ordinary putty will not harden satisfactorily.

(2) Forged Brass Sliding Friction Shoe—Shoe mounted on flat heavy type tension spring which is securely riveted to stiles of vent, assuring proper friction at all times.

(3) Locking Handle—Artistically designed handle of malleable iron cadmium plated is properly placed and is to be securely fastened to sash members. (Bronze at slight additional cost.)

(4) Corner Construction—Heavy frame angle members are mortised, tenoned, and air hammered.

(5) New Ventilator Section—Ventilator section now rolled with baffle. Baffle increases contact margin and assures better weather tightness.

(6) Automatic Chain Latch—Automatic kick-out allows operation by chain of ventilator out of reach from floor.

(7) Frame—Heavy angle section at head, sill and jambs, mortised, tenoned and air hammered.

(8) Heavy Brass Bushed Pivot—$\frac{3}{16}$x1 in. supporting arms for ventilator are concealed when ventilator is closed. They are properly fastened to insure easy and accurate operation.

(9) Ventilator Frame Corner—Heavy, rigid angle section, mortised and tenoned and air hammer riveted.

(10) Pole Hook Ring—To be used in conjunction with cam handle for operation of out-swing ventilators, when out of reach from the floor, with window pole.

(11) New Ventilator Section—Head of out-swing ventilator provides double contact at two points. Baffle increases contact margin and assures better weather tightness.

(12) Vertical Mullion—Exterior Tee Bar to give necessary rigidity, with pressed metal cover on the inside to give pleasing appearance. (Mullion covers extra.)

[For Standard Types and Sizes, see Page 46]

PIVOTED WINDOWS

ADAPTABLE to all types of industrial and manufacturing buildings including warehouse, factory and storage buildings, garages, filling stations, etc., and especially desirable when a great deal of light is needed. The slender but strong and rigid steel muntin bars admit the maximum of light to the interior. They are permanent, fireproof, never stick or warp and open or close easily regardless of climatic conditions.

Pivoted Windows are made of heavy, hot-rolled rust-resisting, steel sections. The outside section is of angle shape to allow $\frac{5}{8}$ in. anchorage at the masonry or mullion connection. The intersection of the horizontal and vertical muntin is a dovetail mitre rigidly interlocking the bars. Double contact weathering is provided on all four sides of ventilator.

Glass size in stationary portion of sash 12x18 in., or 14x20 in. All lights at top and bottom of ventilator are 1 in. shorter and all lights at sides of ventilators are 1 in. narrower than in stationary portion of windows.

Truscon Pivoted Steel Windows are made in a wide range of sizes to fill practically all building needs. Twenty-one types of sash illustrated shaded in diagram are available for quick delivery from stocks. They can be combined with standard mullions to fit almost any size of window opening. All windows are given one dip coat of protective paint at factory.

SCREENS

For economical screened openings we recommend commercial projected windows. See page 44.

CONDENSED SPECIFICATIONS

(1) General—All windows so indicated on the plans and elevations and called for in these specifications shall be the Horizontally Pivoted type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio.

(2) Construction—(a) All members shall be constructed from Truscon specification, hot-rolled, new billet steel.

(b) All joints shall be mortise and tenon, and air-hammer riveted.

(c) Top and bottom rails of ventilators shall be cambered in shop before being fitted to windows.

(3) Mullions—(a) Where two or more window units, less than 6 ft. 3 in. in height, are used in the same opening, they shall be connected with Truscon Standard Plate Mullions (Type T-1).

(b) For window units over 6 ft. 3 in. high, and up to and including 10 ft. $3\frac{1}{8}$ in. high Truscon Standard T-Bar mullions (Type T-2) shall be used.

(c) For all window openings over 10 ft. $3\frac{1}{8}$ in. in height, Truscon Standard Double T-Bar Mullions (Type T-3) shall be used.

(4) Hardware—All ventilators shall be equipped with either push bar, cam latch or spring latch and chain, as marked on drawings; all iron and steel hardware except push bars to be cadmium plated before shipment, push bars are painted.

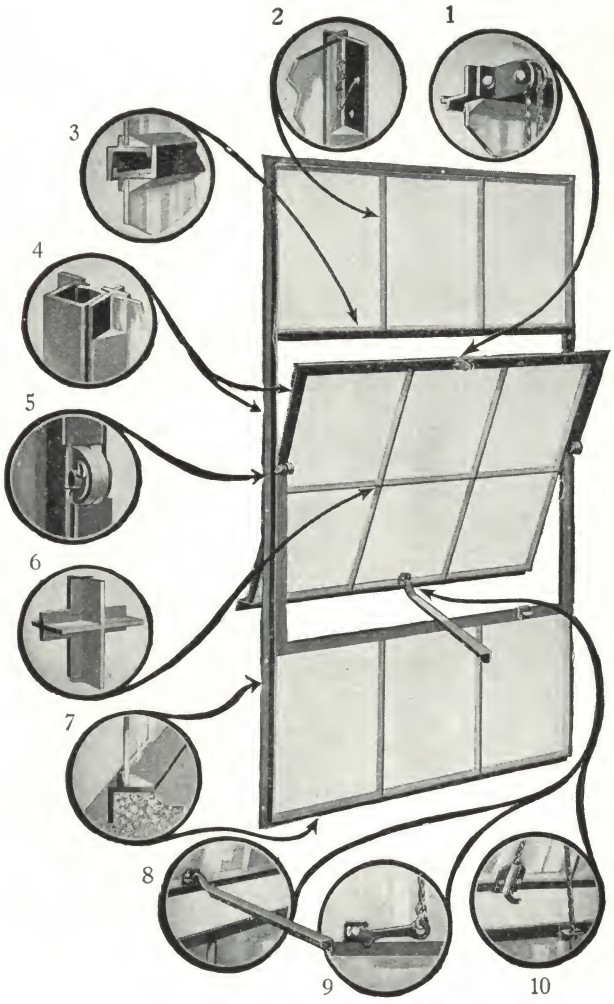
(5) Mechanical Operator—All runs of ventilators, shown on drawings as "mechanically controlled," shall be equipped with torsion or other approved type of operator, as manufactured by the TRUSCON STEEL COMPANY.

(6) Painting—All window units shall be given a dip coat of protective paint before shipment.

(7) Glazing—All standard windows shall be glazed on the inside and glass shall be held in place by Truscon steel wire glazing clips.

UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for all standard sizes shown and special sizes up to 7 ft. 0 in. in width by 12 ft. 0 in. in height, *must be inside angle glazed.* Maximum glass size is 350 square inches.



CONSTRUCTION DETAILS

(1) Roller Bracket at Head of Ventilator—Used with chain operators.

(2) Spring Steel Wire Glazing Clips.

(3) Double Contact Weathering at Head. Note baffle rolled integral with section.

(4) Double Contact Weathering at Jamb.

(5) Solid Steel Pivot with Removable Pin—Assures easy operation and durability.

(6) Dovetail Miter Joints at Muntin Intersections—Joints are skillfully fitted together and assure great strength and rigidity.

(7) Heavy Angle Section at Head, Sill and Jamb—Provides positive anchorage in masonry or mullion connections.

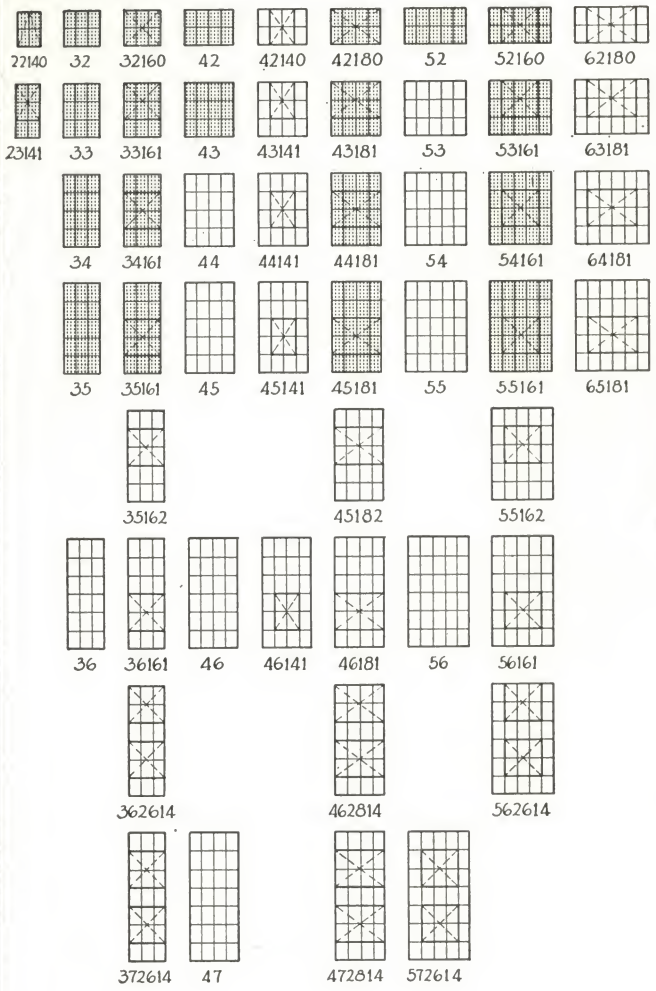
(8) Cam Acting Push Bar—Notched to engage edge of weathering member at bottom of ventilator and hold it open at any desired angle. The ventilator is securely locked by folding push bar back against sash and engaging in the cleat.

(9) Gravity Cam Latch and Chain—Attached to bracket at sill of ventilator and securely held with a locking nut. A pull of the chain releases the cam latch and opens ventilator.

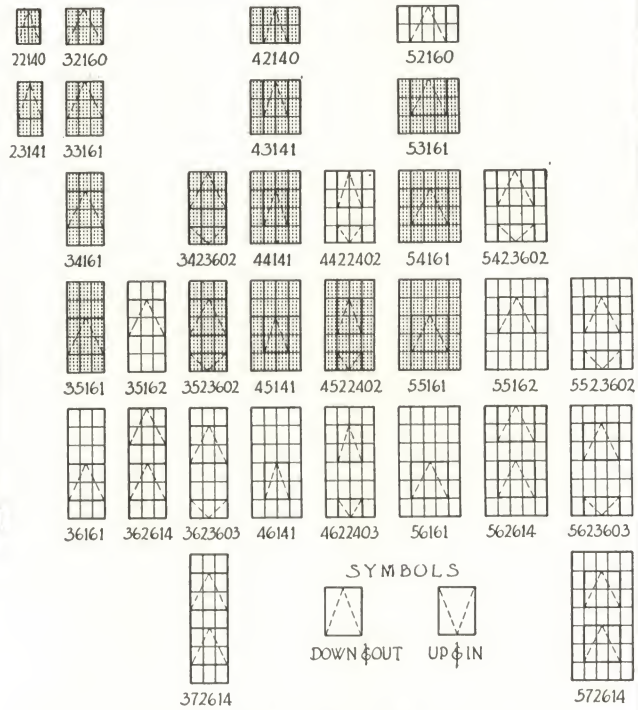
(10) Spring Latch and Chain—For use when ventilator cannot be reached from floor.

[For Standard Types and Sizes see Page 46]

PIVOTED TYPE
12"×18" AND 14"×20" GLASS SIZE

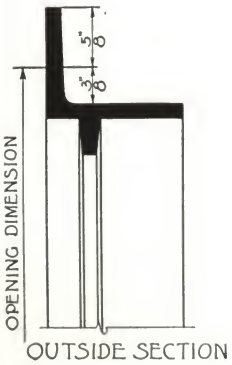


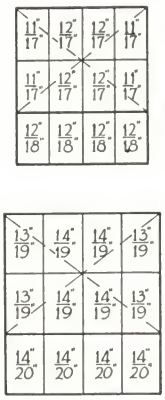
PROJECTED TYPE
12"×18" AND 14"×20" GLASS SIZE



NOTES

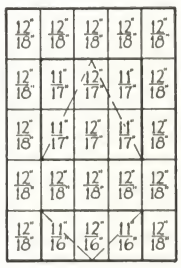
SHADED UNITS ARE WAREHOUSE STOCK TYPES.
PIVOTED VENTS ARE HORIZONTALLY PIVOTED 2" ABOVE CENTER.~ PROJECTED VENTS MAY BE SPECIFIED TO PROJECT DOWN AND OUT OR UP AND IN.*
GLASS SIZES INDICATED ARE FOR FIXED LIGHTS ONLY. GLASS LIGHTS IN VENTILATORS MUST BE CUT AS SHOWN IN GLASS SIZE DIAGRAMS APPEARING BELOW.
WINDOWS MAY BE COMBINED TO FILL OPENINGS OF ANY WIDTH BY MEANS OF MULLIONS, THE WIDTH OF THE OPENING BEING THE SUM OF THE INDIVIDUAL SASH DIMENSIONS PLUS 2" FOR EACH MULLION ADDED.
ALL TYPES SHOWN ARE PUNCHED FOR MULLION BARS.
*VENTS OF WINDOWS CARRIED IN STOCK PROJECT ONLY AS SHOWN.

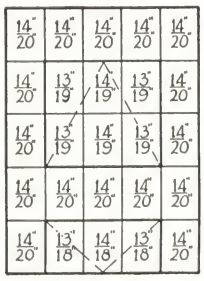




GLASS SIZES FOR STANDARD PIVOTED WINDOWS

OPENING DIMENSIONS					
LIGHTS WIDE	GLASS WIDTH 12"	GLASS WIDTH 14"	LIGHTS HIGH	GLASS HEIGHT 18"	GLASS HEIGHT 20"
2	2'-1 5/8"	2'-5 5/8"	2	3'-1 5/8"	3'-5 5/8"
3	3'-2"	3'-8"	3	4'-8"	5'-2"
4	4'-2 3/8"	4'-10 3/8"	4	6'-2 3/8"	6'-10 3/8"
5	5'-2 3/4"	6'-0 3/4"	5	7'-8 3/4"	8'-6 3/4"
6	6'-3 1/8"	7'-3 1/8"	6	9'-3 1/8"	10'-3 1/8"
			7	10'-9 1/2"	11'-11 1/2"





GLASS SIZES FOR STANDARD COMMERCIAL PROJECTED WINDOWS

TRUSCON STEEL COMPANY
Youngstown, Ohio

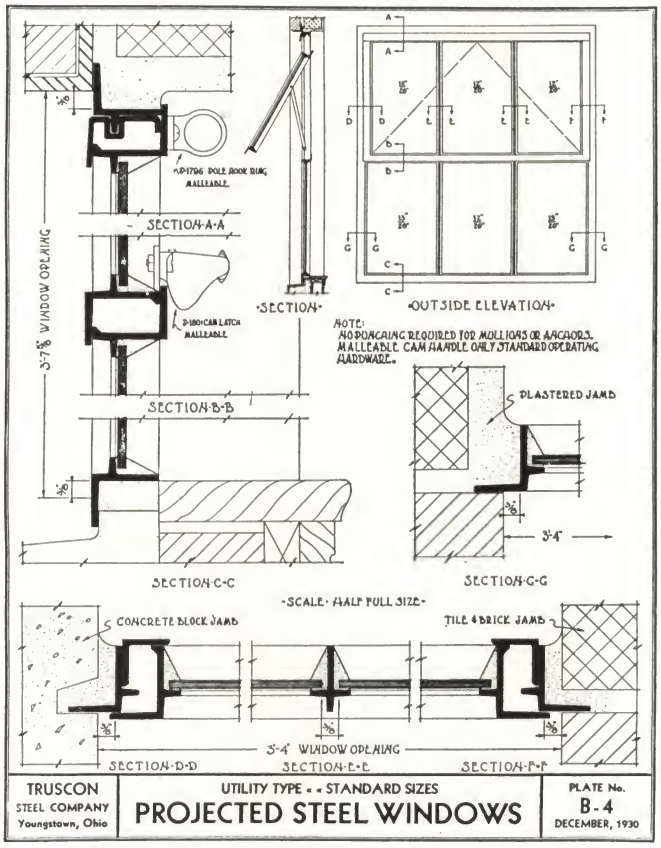
TYPES AND SIZES
PIVOTED AND COMMERCIAL PROJECTED STEEL WINDOWS

PLATE No.
A-1-B
NOVEMBER, 1935

UTILITY WINDOWS

TRUSCON Utility Steel Windows are ideal for use in buildings such as garages, filling stations, stores, shops, basements, area-ways, etc. The ventilator is a balanced projecting type which in opening swings down and out leaving the interior entirely unobstructed.

Utility Steel Windows are furnished in only one size—3 ft. 4 in. wide by 3 ft. 7⅝ in. high. Glass size in fixed portion of sash is 13 in. x 20 in. in the two outside lights and 12x20 in. in center fixed light. The glass size of lights in the ventilator is 12 in. x 20 in.



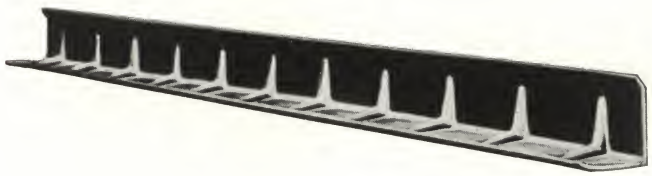
TRUSCON STEEL COMPANY Youngstown, Ohio	UTILITY TYPE - - STANDARD SIZES PROJECTED STEEL WINDOWS	PLATE No. B-4 DECEMBER, 1930

LINTELS

PRESSED STEEL

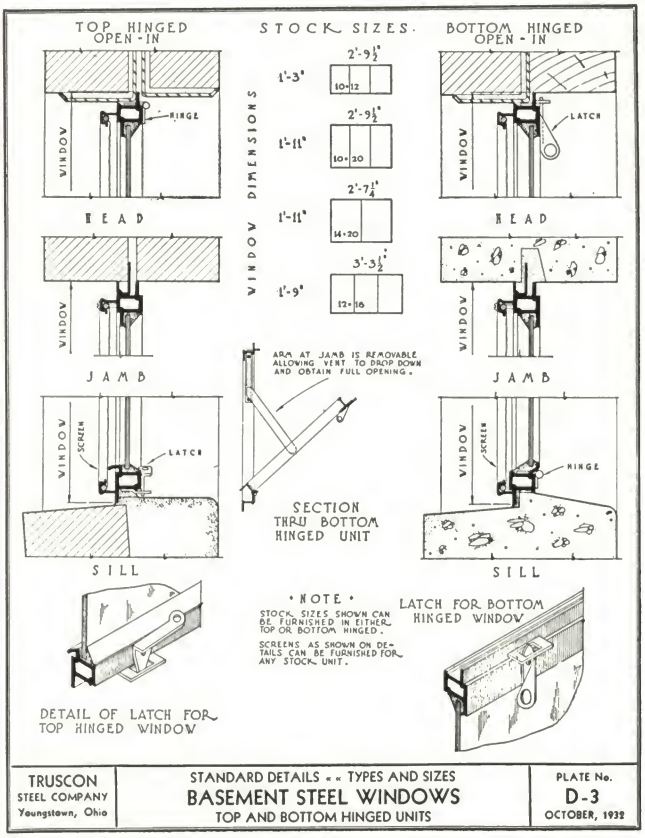
THE turned edges provide a proper mortar bed, and cross ribs placed at proper intervals give the maximum degree of rigidness to the lintel and ample support to the masonry above it. Lintels can be used in single or in multiple units.

3½x3½ in. x 11 gauge, weight 2.7 lb. per lin. ft.
Standard lengths: 2 ft. 6 in., 3 ft., 3 ft. 6 in., 4 ft., 4 ft. 6 in.
4x4 in. x 9 gauge, weight 3.90 lb. per lin. ft.
Standard lengths: 5 ft., 5 ft. 6 in., 6 ft., 6 ft. 6 in., 7 ft.



BASEMENT WINDOWS

BASEMENT Windows are made either with the hinge at the top or at the bottom, both types having the same sizes and both opening in. The bottom-hinged window has an arm to limit the opening. They are furnished complete with hardware. Steel frame screens with accessories for attachment are available.



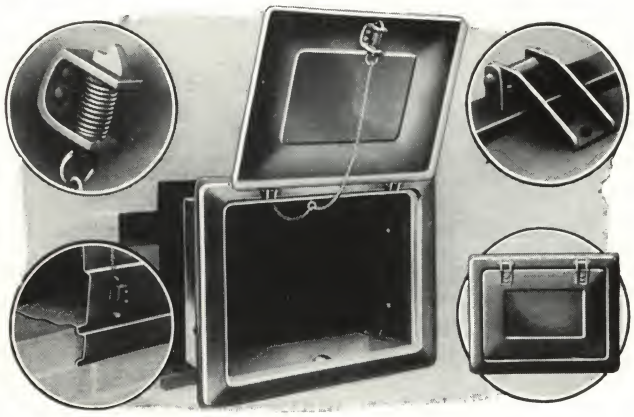
TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD DETAILS - - TYPES AND SIZES BASEMENT STEEL WINDOWS TOP AND BOTTOM HINGED UNITS	PLATE No. D-3 OCTOBER, 1932

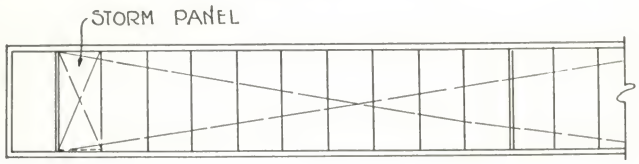
COAL CHUTES

PRESSED STEEL

WEATHER-TIGHT and fool-proof. The door and frame design develops maximum strength while keeping the weight of the unit to a minimum. The entire frame is electrically welded into one unit.

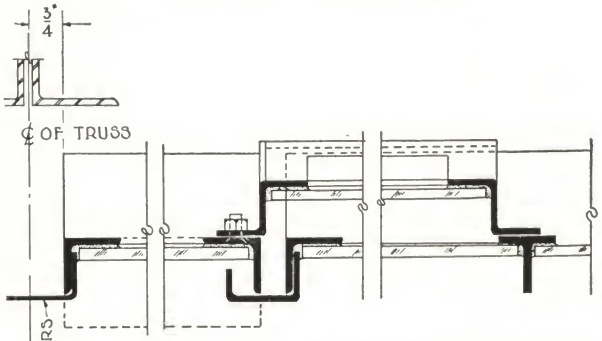
Two Standard Sizes—Frame, 27x21¼ in. Door opening, 22½x16¾ in. Depths, 8 or 12 in. Weights, 33 or 39 lbs.



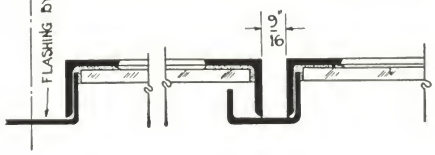


OUTSIDE ELEVATION

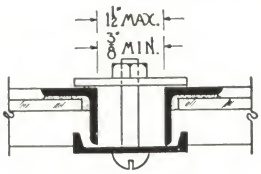
TABLE OF OPENING HEIGHTS, SASH HEIGHTS AND GLASS SIZES				
HEIGHT OF OPENINGS	HEIGHT OF SASH	GLASS SIZES		
		STANDARD PANELS	END PANELS	STORM PANELS
2'-10 1/2"	3'-0"	23 5/8" x 32 3/4"	22 3/8" x 32 3/4"	23 3/8" x 32 3/4"
3'-10 1/2"	4'-0"	23 5/8" x 44 3/4"	22 3/8" x 44 3/4"	23 3/8" x 44 3/4"
4'-10 1/2"	5'-0"	23 5/8" x 56 3/4"	22 3/8" x 56 3/4"	23 3/8" x 56 3/4"
5'-10 1/2"	6'-0"	23 5/8" x 68 3/4"	22 3/8" x 68 3/4"	23 3/8" x 68 3/4"



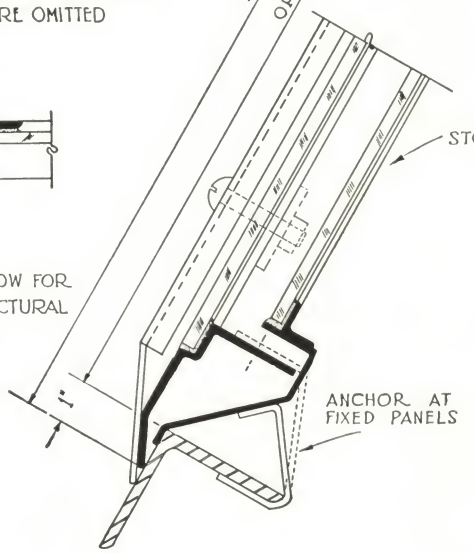
TYPICAL END SECTION SHOWING END AND STORM PANEL



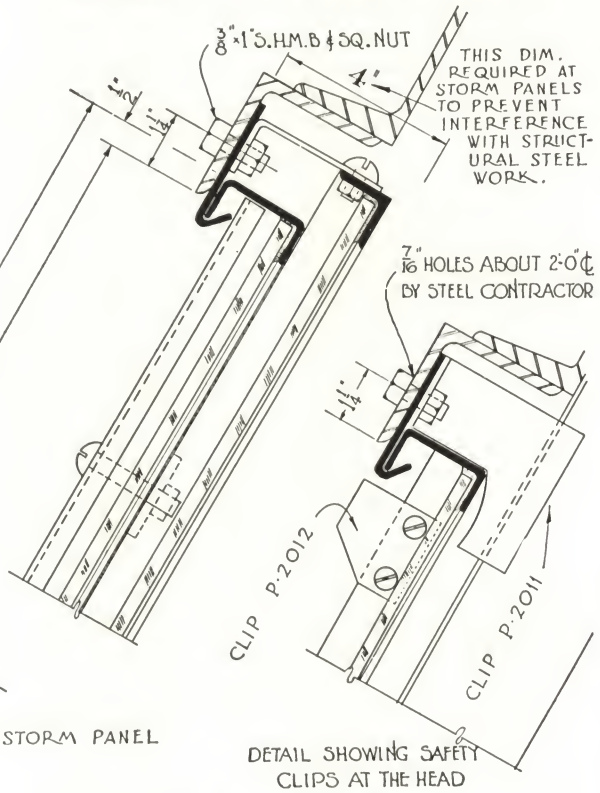
END CONDITION WHERE STORM PANELS ARE OMITTED



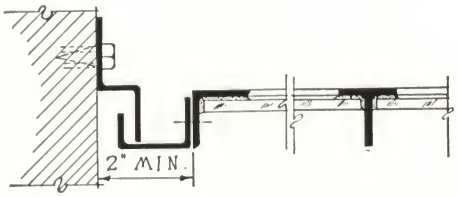
MULLION
ADJUSTABLE TO ALLOW FOR VARIATION IN STRUCTURAL STEEL WORK.



SECTION SHOWING SWING SASH AND STORM PANEL.
SASH CAN BE HUNG IN EITHER VERTICAL OR SLANTED POSITION.



DETAIL SHOWING SAFETY CLIPS AT THE HEAD



TYPICAL END SECTION SHOWING SWING SASH EXTENDING TO JAMB

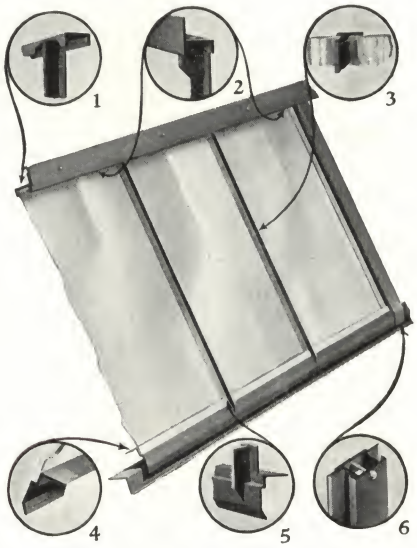
-NOTES-

STANDARD UNITS OF TRUSCON CONTINUOUS SASH ARE DESIGNED FOR TRUSS SPACING OF 20'-0" ON CENTER. HOWEVER THEY MAY BE COMBINED TO FILL OPENINGS ANY WIDTH OR HEIGHT.

TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD DETAILS CONTINUOUS STEEL WINDOWS	PLATE No. E-7 OCTOBER, 1932

CONTINUOUS WINDOWS

IDEALLY suited for use in industrial plants where the nature of the factory work requires frequent and rapid ventilation of the building. They are also most practical for any buildings having monitors or saw-tooth faces, or where banks of windows reach considerable heights, necessitating remote control for operation. Particularly valuable where large areas are enclosed which cannot be satisfactorily lighted through the side walls.



The scientific application of Continuous Windows to a building insures maximum daylight and gives absolute control of temperature and ventilation, resulting in a marked effect on increased efficiency and reduction of production costs. The quick opening and closing of glass areas by mechanical operation is invaluable to clear out gases, smoke and excessive heat and to protect against sudden change in weather.

CONSTRUCTION DETAILS

(1) Welded Mortise and Tenon Joint—Prevents twisting.

(2) Hinge Member—Forms continuous bearing giving perfect weathering.

(3) Glazing Clips—Of heavy brass on vertical muntin bars.

(4) Wide Flange—Adds lateral stiffness to window. For the attachment of mechanical operator.

(5) Mortise and Tenon Joint—Welded joint.

(6) Vertical Expansion Mullion.

PRESSED STEEL FRAMES—Particularly well adapted for use in modern structures where the effect of massive strength must be accurately met. Made of heavy gauge steel, absolutely uniform and economical. Details furnished on request.

MECHANICAL OPERATORS

TRUSCON is confident that its many years' experience in solving the problems of daylighting and ventilation through the medium of a complete line of steel windows has placed it in an enviable position to design and manufacture efficient and dependable mechanical window operators.

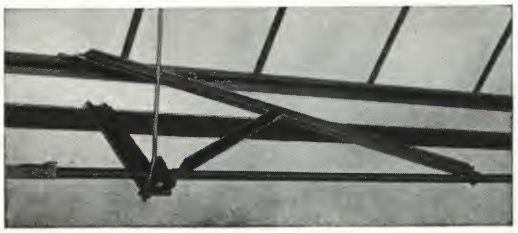
Operators for opening and closing Continuous, Pivoted and Projected types of windows are available in either hand or motor operated units. They are made in various designs and capacities to meet the requirements of any job. On this and the following page are illustrated a few representative types of operators designed and manufactured by TRUSCON STEEL COMPANY.

We offer the services of our engineering department to assist you in working out problems of operator design or installation. Truscon maintains offices in all key cities for your convenience.

CONTINUOUS WINDOW OPERATOR:

The operator illustrated below is of the tension toggle type and is used to operate long runs of Continuous windows. For short runs, Rack and Pinion type may be used due to lighter loads.

At the left is illustrated P-750 Hand Chain Operated Power for Tension Toggle operation of medium length runs. This power can be motorized conveniently when electrical control is desired. For longer runs, CP-69 Light Duplex Power, or CP-83 Heavy Duplex Power is recommended. Powers CP-69 and CP-83 must be motorized.



Tension Toggle Arms as illustrated above are made in four sizes to suit the different standard heights of continuous windows.

WORM AND GEAR OPERATORS

ILLUSTRATED below is worm and gear operator, hand chain controlled, which operates a torsion shaft with lever arms to actuate one or more tiers of horizontal pivoted ventilators. Vertical shaft with miter gear and hand wheel can be used instead of hand chain.

The worm and gear is fully enclosed and runs in oil tight housing.

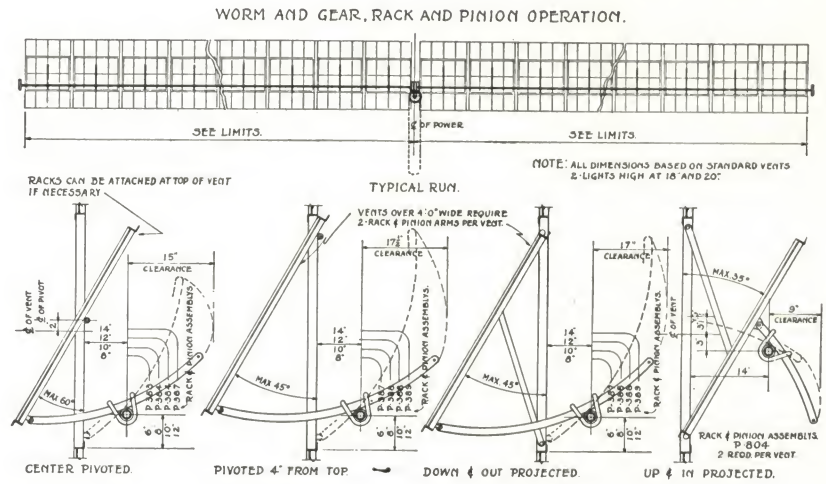
Typical Illustration of Worm and Gear Lever Arm Operating Horizontally Pivoted Windows

RACK AND PINION OPERATORS

RACK and pinion operator is practically the same as worm and gear except that rack and pinion arms are used instead of lever arms, and the torsion shaft makes one or more complete rotations. This type is generally used for operating projected and top pivoted ventilators but may be used when it is desired to operate long lines of horizontal pivoted ventilators.

In addition to hand chain or vertical shaft with miter gear and hand wheel control, rack and pinion operators can be electrically controlled.

Typical Illustration of Rack and Pinion Operation of Outward Opening Projected Windows



SILENTAIRE

Reg. U. S. Pat. Off.

Silentaire muffles street noises and at the same time provides ventilation without draft. The muffling of noise and the flow of air are made possible by the scientific construction and special acoustical controls so that the effect, when installed, is that of a closed window from the standpoint of noise elimination, and of an open window from the standpoint of ventilation with greatly improved air circulation.

SERIES 70—ELECTRICALLY OPERATED

Keeps out the noise the same as a closed window and also controls the circulation of fresh air indoors both in volume and direction. The vanes of the unique shutters may be turned to bring a breeze directly into the room, deflect it to any part or diffuse it in several directions as desired.

An ingenious filter removes dust, pollen and other impurities and assures a full flow of air through the life of the filter.

Drapes may be hung as usual. The whole unit may be removed quickly and easily when the window is cleaned.

SALIENT FEATURES

Noise kept out to extent of closed window quietness, by means of long established Silentaire acoustical principles.

Ventilation under complete control. 3-speed switch regulates volume of air.

Long life filters—full air flow through filter during entire life. Filters instantly changed by removing universal independent shutter.

Fits any size double-hung window—instantly removable—can be installed in casements, hopper vents or other windows.

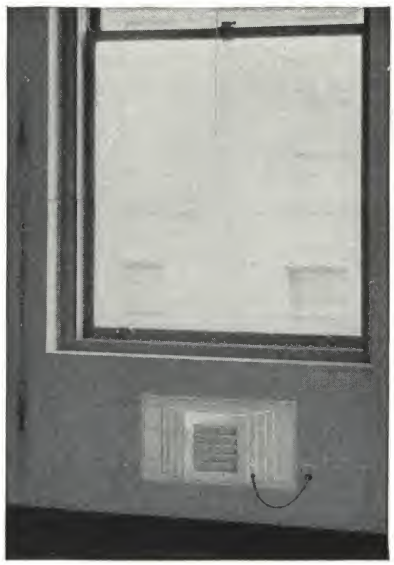
Projects less than 4 in. into room at center, 1 in. at ends.

Consumes less than 35 watts of electric power.

Can be installed in most localities for less than $50.00.

WALL INSTALLATION

Series 70 Silentaire may be installed in the wall entirely separated from the window. This provides an efficient ventilation air filter and noise muffler. Installation details furnished on request.



NON-MECHANICAL, NOISE-EXCLUDING VENTILATORS

Series 50-M, Metal Front

All metal, self-contained frame. Interior construction designed for maximum sound absorption with improved ventilation control. Complete unit is mounted outside window. Creates no new condition in window operation. The sash opens, closes and locks as before. Silentaire may be removed at any time by simply lifting it off its mounting brackets.

Weatherstrip along the bottom makes the window substantially weathertight. A sash seal is fastened to the lower rail of the upper sash, closing the space between the sliding sections when windows are open and thus preventing sound leakage at that point.

Built for every kind and size of double-hung window. Simple to install. Full directions with every unit.

Series 60-G, All Glass Unit

Uses the principle of sound reflection permitting clear vision. Outside deflector is of heavy polished wire plate glass in a safety frame. Inside reflector is of heavy curved glass scientifically focused to exclude sound waves.

The combination of outside deflector and inside reflector prevents rain or snow from entering the room, any striking the ventilator is carried away through outlets in the sill.

The sash opens, closes and locks as before. A sash seal is fastened to the lower rail of the upper sash to prevent noise leakage when the window is open.

Silentaire may be removed simply by lifting it off its brackets.

Built for any kind and size of double-hung window. Simple to install.

DETENTION WINDOWS

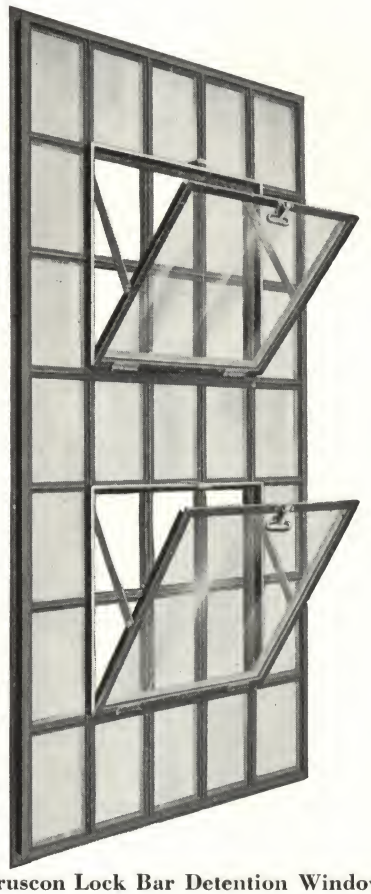
MODERN penology definitely recognizes that light and ventilation are among the most certain incentives to the good behavior and health of the inmates. In selecting windows for detention institutions such as prisons, reformatories and psychopathic hospitals, the designs require a variety of types to conform to the different conditions found within an institution.

Security is the first consideration, but it is obvious that what might be adequate security for one class of inmates is totally inadequate for a more desperate class. It is with the object of providing maximum efficiencies consistent with the degree of detention-security desired that the various types of Truscon Detention Windows were developed.

Included in the full line of Truscon Detention Windows are types which will meet all requirements for such institutions. Each type offers particular advantages—in some cases, maximum security; in others maximum lighting and ventilation. The individual needs will, in each case, govern the selection. Only a few of the many types of these detention windows can be portrayed on these pages. Information on other types may be secured upon request.

TRUSCON LOCK BAR WINDOW

This window can be furnished with sections of various weights, depth and thickness. All windows, however, incorporate the detention and ventilating features described by the accompanying illustration and specifications. These specifications will insure ample protection at an economical cost.



Truscon Lock Bar Detention Window

SPECIFICATIONS

(1) General—All Detention Windows as shown on drawings, and called for in these specifications, shall be Lock Bar Type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution will be permitted without the written approval of the architect or engineer.

(2) Scope of Work—This contractor shall include in his work the furnishing of all Detention Windows complete, in accordance with design and size as shown on drawings and covered in these specifications and the erection and attaching of hardware.

(3) Work Not Included—Glass, putty, glazing, caulking and field painting are not included in this contract.

(4) Material—All members shall be constructed of Truscon specification, hot-rolled, new billet steel.

(5) Construction—(a) Main frames shall be constructed of sections not less than $1\frac{7}{16}$ in. deep and all joints and intersections shall be welded both inside and outside. Welds shall be ground smooth before assembly where necessary for attachment of ventilators and screens.

(b) Ventilator sections shall not be less than $1\frac{7}{16}$ in. deep.

(c) All units shall be made straight and true, to insure perfect alignment, weathering and ease of operation.

(d) Units shall be constructed of fixed frame section with muntins continuous from jamb to jamb and head to sill, with vertical muntins spaced not more than $6\frac{3}{8}$ in. on center and horizontal muntins not more than $9\frac{3}{8}$ in. on center. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be mortised and tenoned, and air-hammer riveted. Fixed sash to be backed up with bottom-hinged ventilator to swing in at top and having two steel supporting arms riveted to frame and ventilator. Supporting arm shall be of a design permitting the ventilator to open thirty degrees, and shall be concealed within the sections when the ventilator is closed. Ventilators have muntins only when they cover 10 lights or more of the main frame and in that case have vertical muntins lined up with main frame vertical muntins. Additional muntins are extra.

(e) Units may be furnished with projected ventilators to project up-and-in and shall be supported on two $\frac{3}{16}$x1-in. high carbon steel supporting arms having a bronze flange bushing and fastened to frame and ventilator by a special $\frac{3}{8}$-in. steel shoulder rivet. Supporting arms shall be concealed within sections when ventilator is closed. Each ventilator shall be equipped with vertical sliding brass friction shoe, permitting the ventilator to be opened to any degree within its limit.

(6) Hardware—Each sash shall be equipped with combination spring latch and strike screwed to section and riveted. Each ventilator shall be hinged at the bottom with two $3\frac{1}{2}$x$2\frac{1}{2}$-in. steel butt hinges, spot-welded to vent and screwed and riveted to frame.

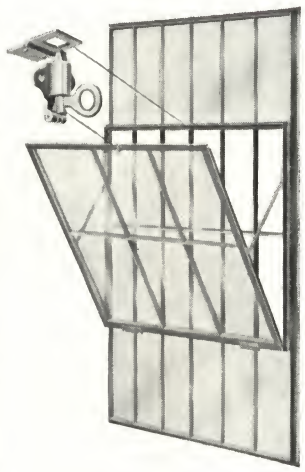
(7) Painting—All windows shall be given one prime coat of paint before shipment.

(8) Glazing—All units shall be OUTSIDE putty-glazed. The ventilator shall be glazed and the portion of the fixed sash directly in front of the ventilator to remain unglazed. Glass shall be held in place with Truscon copper-clad spring steel wire glazing clips. All glass shall be bed and face puttied with Truscon special metal window putty.

(9) Erection—Each unit shall be set plumb and true in opening, securely wedged and held in alignment during construction. After the windows have been placed in the openings and before glazing, the sash shall be carefully adjusted so as to provide perfect weathering, and ease of operation. The joints between frame and masonry shall be carefully pointed by the mason contractor.

DETENTION WINDOWS

THE Truscon Security Detention Window is made of pivoted window sections and is the most economical of all Detention Windows from initial cost standpoint as well as burglary insurance. These windows afford ample daylight and ventilation. Chain stores, grocery or department stores or any building with windows on alleyways or courts need these windows. Eight types with nominal glass size 6x18 in. are carried in stock for immediate delivery. Special designs in either 6x18 in. or 6x9 in. glass size or of special glass sizes will be made on order.



Truscon Security Detention Window

Where the exterior and interior simplicity of ordinary institutional construction is the desirable feature the Spring Balanced Detention Window fulfills those requirements admirably. In this type of window ventilation may be obtained at top and bottom.

Truscon Spring Balance Detention Window Series 60HD

CONDENSED SPECIFICATIONS—SERIES 60HD

(1) General—All windows shown on drawings, or called for in specifications, shall be Heavy Detention Spring Balanced Double-Hung Windows, as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be permitted without the written approval of the architect or engineer.

(2) Material—Frames and Sash: Shall be constructed of hot-rolled new billet steel; sub-frames, if required, shall be of 14-gauge material; exterior moulding, if required, of 18 gauge.

(3) Construction—(a) *Frame Members*—Head and jamb members shall be of a special rolled section, depth of section to be not less than 4½ in., including cove moulding, which is an integral part of the frame section. Intersection of sections to be welded and ground smooth where necessary. When required, an exterior sub-frame and moulding may be applied to frame section. *(See detail.)*

(b) *Sash*—Shall be constructed of channel sections not less than $1\frac{7}{16}$ in. deep, the corners to be welded.

(c) *Muntins*—Where required, shall be hot-rolled sections. At intersections, there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted.

(4) Weathering—A specially designed combination weathering and parting strip of extruded bronze shall be provided at the jambs. *(See detail.)* There shall be a weathering block provided at the meeting rail.

(5) Hardware—(a) All units shall be equipped with one pair of malleable lift handles and sweep lock at meeting rail. Special jamb detention locking device, key operated, can be furnished in place of sweep lock at option of customer.

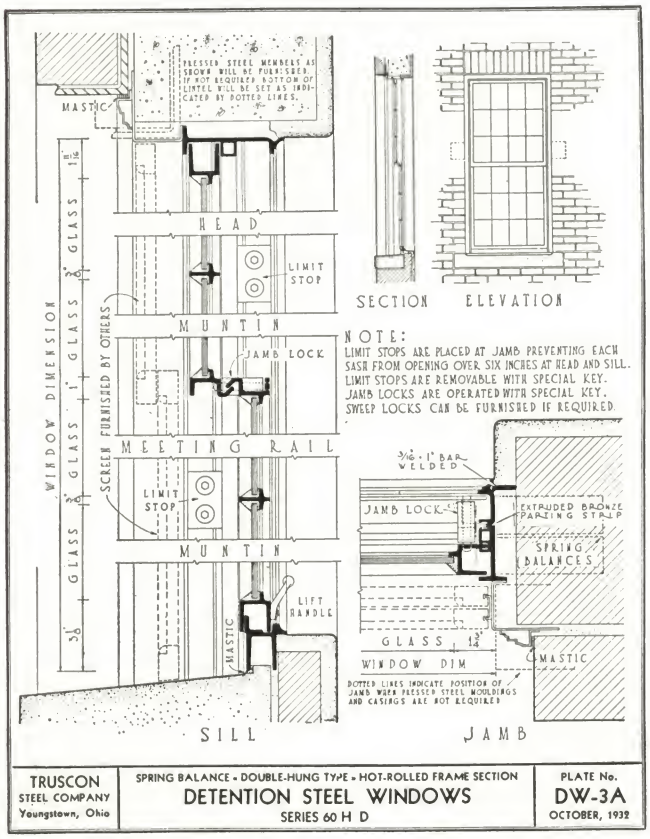
(b) Each sash shall be suspended on two enclosed spring balances as furnished by TRUSCON STEEL COMPANY. Spring balances shall be enclosed in a metal housing and securely attached to frame. Metal tapes shall be properly attached to sash and shall hang vertically and run freely at all times.

(c) Limit stops shall be provided to prevent upper or lower sash from opening more than 6 in. and shall be removable only by a special key. Upon removal, top or bottom sash can slide full height of opening.

(6) Anchors—Units shall be equipped with strap anchors at jamb for attaching to building construction.

(7) Painting—All windows shall be given one coat of protective paint, before shipment.

Note: Screen guides can be furnished and applied to exterior subframe of Series 60HD windows to permit application of vertical sliding screen. (See detail.)

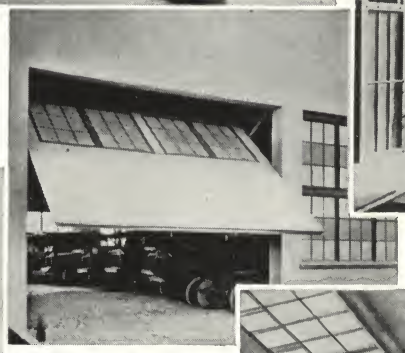


Donovan Windows and Casement Windows can be designed to incorporate detention features and still retain the salient features peculiar to their design.

Airplane Hangar Doors
Round the Corner Type

Vertical Lift-Swing Doors

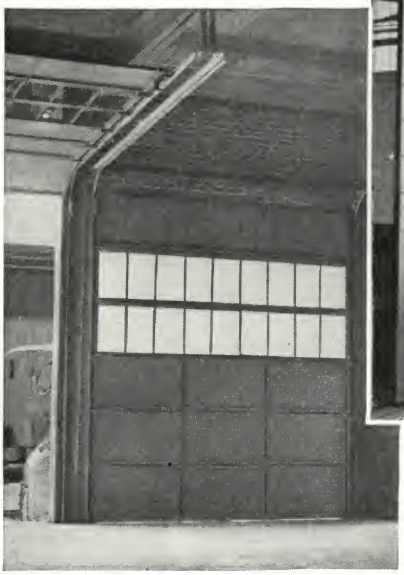
Accordion Doors



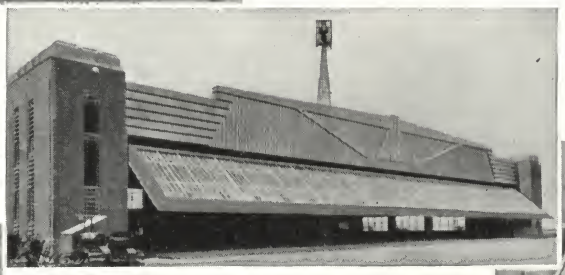
Canopy Doors

Airplane Hangar Doors
Straight Track Type

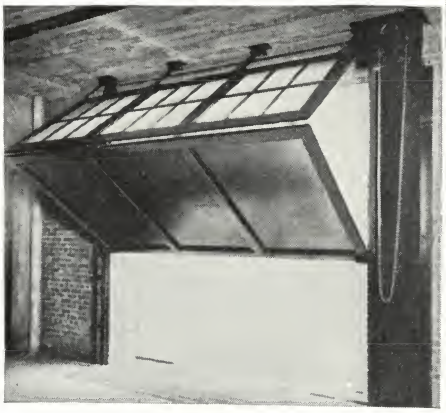
Telescopic Canopy Doors



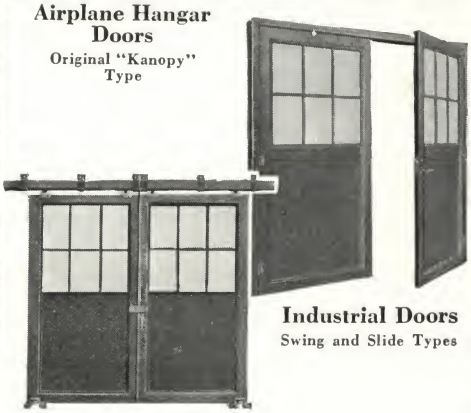
Overdoors
Operating Overhead



Airplane Hangar Doors
Original "Kanopy" Type



Bifold Doors



Industrial Doors
Swing and Slide Types

Vertical Lift Doors

STEEL DOORS

WALLS may be built of steel, reinforced concrete or other masonry construction but unless the doors in them are of steel construction the advantages are largely lost. Of equal importance is the ability of steel doors to withstand constant hard usage, to keep out marauders, to be unaffected by weather conditions and to last indefinitely.

These important factors have all had primary consideration in the design and manufacture of Truscon Steel Doors. The satisfaction these doors are giving in innumerable industrial, commercial and other buildings is the best testimonial to their efficiency. Steel doors are fire-resisting, long-lived and do not warp, swell or rot. They protect the contents against theft, trespass and the elements.

The best commercial grades of steel go into doors made by Truscon. This steel is formed into rectangular tubes and structural hot rolled shapes, which after many years of application have been accepted by outstanding engineers as the most practical for use in steel door construction.

Truscon, with its many years' experience in the design and manufacture of Steel Doors of all types and sizes, is in excellent position to work with architects and engineers in selecting the proper type of steel door to fit in perfectly with the design and construction details of any building.

DOORS DESIGNED AND MANUFACTURED BY TRUSCON

INDUSTRIAL STEEL DOORS

Carried for immediate delivery in Truscon warehouses throughout the United States. Recommended for use in basements, furnace and boiler rooms, fire exits, service entrances, utility spaces and pent houses of hotels, residences, apartments, schools, hospitals, office buildings, and for general use in grain elevators, ramp enclosures, oil pump houses, freight and power houses, filling stations, public and private garages and factories.

INDUSTRIAL DOORS FOR LARGE OPENINGS

Designed for factory, mill, commercial and warehouse buildings where the size and method of operation of doors is not subject to limitations.

ACCORDION DOORS

An extremely fast-operating door, especially designed for motor operation and fabricated especially to meet such conditions as are presented by railroad shops, fire stations, round houses, public garages and any structure where unobstructed openings for railroad entrances are desirable.

VERTICAL LIFT DOORS

Because of their simplicity of operation, are used in warehouses, freight houses, garages and factories. This type of door can be furnished in practically any size. An outstanding feature is the unobstructed opening when the door is fully opened.

VERTICAL LIFT-SWING AND TURNOVER DOORS

Heavy, rugged doors, especially desirable for pier and warehouse work. They operate easily, swing overhead and require a minimum of head room when opened.

OVERDOORS

Offer many advantages. They are light, fast doors with spring counterweights, giving economy of space both inside and outside, protection from the weather, neat appearance and ease of operation. Especially recommended for use in garages, service stations and repair shops where a minimum of head room is available.

BIFOLD DOORS

Require a medium amount of head room and medium sizes are better hand operated. They are used principally in freight houses, warehouses, shipping and loading platforms. They are mechanically correct and require less head room than many other types that fold above the opening.

INDUSTRIAL CANOPY DOORS

An all purpose door. Designed to operate at a slower speed than the majority of doors so that pedestrians and traffic will not be in any danger while the door is in operation. It fits in anywhere, from the small individual garage to the largest openings in bus or truck terminals. It requires a minimum amount of head room. Its size is practically unlimited.

AIRPLANE HANGAR DOORS

Fabricated in several types to meet the requirements of any type of hangar. They are:

Straight Slide Type—The strongest, finest and most serviceable and economical door of this type on the market. There is no limit to either the height or width of opening that this type of door will meet.

Round the Corner Type—The door units operate on separate tracks which are curved at the ends of the openings and which parallel each other. When open the doors lie against the inside wall of the hangar to allow maximum opening.

Morgan Type—Is the latest design of our electrically operated canopy doors for openings exceeding 100 feet in width and 28 feet in height.

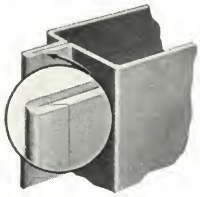
Telescopic Canopy Type—Is adaptable to buildings where it is desirable to keep the center of gravity of the door inside the front trusses and where a restricted canopy overhang is necessary.

INDUSTRIAL DOORS AND FRAMES

SERIES 31
SWING TYPE

ADAPTABLE for use in basements, rear entrances, boiler rooms, fire exits, elevators and similar places in residences, hotels, apartments, schools, churches, institutions, shops, warehouses, filling stations, stores and similar applications.

Industrial Doors are furnished in various sizes for swing or slide installations and meet most practical conditions. Swing and Slide doors are carried in stock for five sizes of single openings and five sizes of double openings. Refer to plates J-1 and J-2 for actual sizes of leaves, clearances and installation details. Other sizes can be made to order.



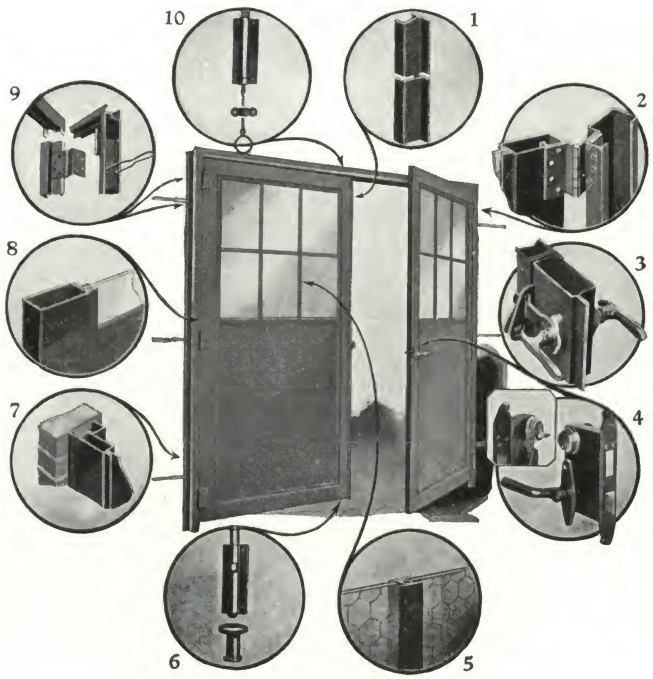
Lock Seam Tube

Stiles and rails are made of pressed steel tubing with lock seam All corners are carefully fitted and welded solidly. The large size of the tube, 1¾x5 in., provides an ideal condition for welding. There is practically 14 inches of weld at each corner.

Standard Pressed Steel Door Frames—Are furnished for Swing Type Doors. They are heavily reinforced at corners and at hinges and are prepared for standard hardware.

Regularly furnished with masonry anchors so they can be erected as the walls are built. Frames will also be furnished with provisions for expansion bolts if so specified.

[SPECIFICATIONS ON PAGE 58]



CONSTRUCTION DETAILS

(1) Astragal—Hot rolled steel, rigidly attached to left hand leaf.

(2) Off Set Hinges—Extra heavy duty steel template hinges—three attached for each swinging leaf. Frame heavily reinforced for hinges.

(3) Lever Latch—Heavy and serviceable—equipped with padlock brackets and neat lever handles.

(4) Cylinder Lock—Key cylinder on outside and thumb turn on inside operating dead bolt. Lever handles operate spring latch from either side.

(5) Muntin Bar—Showing method of glazing. All muntins are solidly welded direct to door rail.

(6) Foot Bolt—Automatic, furnished with all double swing doors, Series 31.

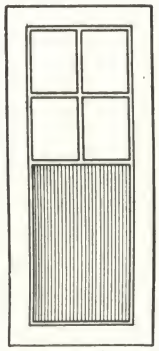
(7) Pressed Steel Frame—Gives a more finished appearance than structural frames. Fastened in masonry by means of anchors attached to frame.

(8) Sash—Showing method of glazing and muntin bar attached directly to door rail. Neat paneling effect obtained by this type of construction.

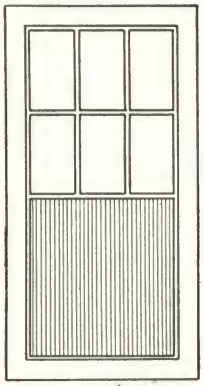
(9) Anchors and Reinforcements—Showing method of simple field assembly of pressed steel frames. Anchors always furnished.

(10) Chain Bolt—For inside locking at top of left hand leaf of all double swing doors.

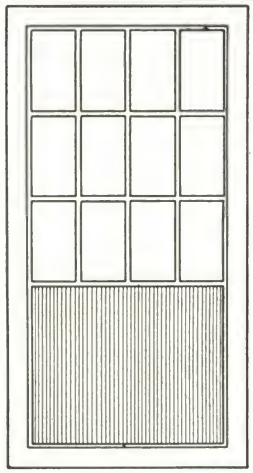
SINGLE DOORS SHOWN ARE COMBINED TO MAKE DOUBLE DOORS LISTED ON CHART BELOW



NO'S 26-70 & 30-70



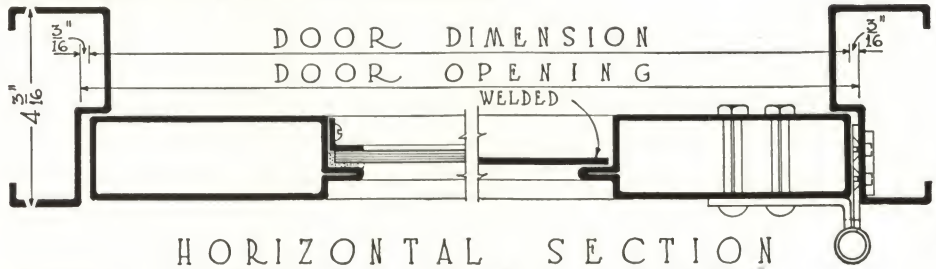
NO'S 36-76 & 40-80



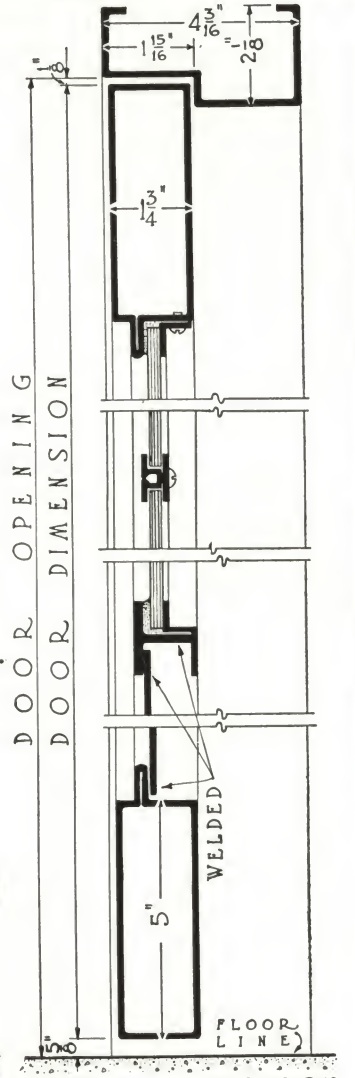
NO 50-100

STOCK SIZES					
DOOR NO.	SIZE OF DOOR WIDTH	HEIGHT	SIZE OF OPG. WIDTH	HEIGHT	GLASS SIZE
SINGLE SWING					
26-70	2'-5 5/8"	6' 11 1/4	2'-6"	7'-0"	9 7/16" x 16"
30-70	2'-11 5/8"	6'-11 1/4	3'-0"	7'-0"	12 7/16" x 16"
36-76	3'-5 5/8"	7'-5 1/4	3'-6"	7'-6"	10 1/8" x 19"
40-80	3'-11 5/8"	7'-11 1/4	4'-0"	8'-0"	12 1/8" x 22"
50-100	4'-11 5/8"	9'-11 1/4	5'-0"	10'-0"	12" x 22 1/2"
DOUBLE SWING					
50-70	4'-11 5/8"	6'-11 1/4	5'-0"	7'-0"	9 7/16" x 16"
60-70	5'-11 5/8"	6'-11 1/4	6'-0"	7'-0"	12 7/16" x 16"
70-76	6'-11 5/8"	7'-5 1/4	7'-0"	7'-6"	10 1/8" x 19"
80-80	7'-11 5/8"	7'-11 1/4	8'-0"	8'-0"	12 1/8" x 22"
100-100	9' 11 5/8"	9'-11 1/4	10'-0"	10'-0"	12" x 22 1/2"

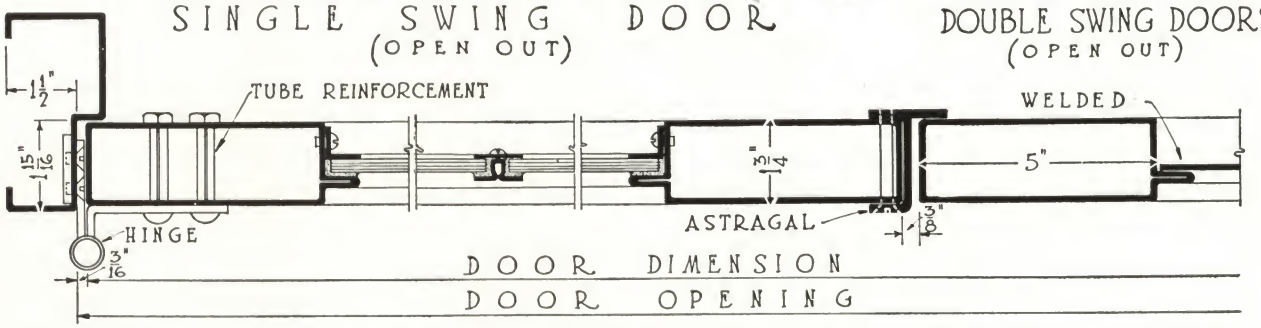
NOTES:
ALL DOORS ARE FURNISHED WITHOUT GLASS. GLAZING ANGLES HOWEVER ARE FURNISHED FOR ALL LIGHTS. DOORS MAY BE FURNISHED WITH SOLID STEEL PANELS IF DESIRED.



HORIZONTAL SECTION SINGLE SWING DOOR (OPEN OUT)



VERTICAL SECTION FOR SINGLE AND DOUBLE SWING DOORS (OPEN OUT)



HORIZONTAL SECTION THRU DOUBLE SWING DOOR (OPEN OUT)

TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD DETAILS - SWING UNITS **INDUSTRIAL STEEL DOORS** SERIES 31	PLATE No. **J-1** OCTOBER, 1934

INDUSTRIAL DOORS

SERIES 31
SLIDE TYPE

SPECIFICATIONS

(1) General—All doors shown on drawings and marked Industrial Steel Doors, shall be of the type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written consent and approval of the architect.

(2) Material—(a) The stiles, top rail and bottom rail of the Industrial Steel Door, Series 31, shall be constructed of 5x1¾ in. No. 14 gauge pressed steel tube.

(b) Sash panel shall be an integral part of the door leaf securely welded to the door rails.

(c) The steel panels shall be constructed from annealed and patent leveled sheets.

(3) Construction—(a) The corner shall be of welded construction with all joints face welded and ground smooth.

(b) The lower portion of the door shall be equipped with steel panels electrically spot-welded to the stiles and rails and shall not be less than No. 18 gauge in thickness.

(c) The upper portion of the door shall be fitted with a sash panel, all members of which shall be welded in place. The glass shall be held in place with putty and glazing angles.

(4) Hardware—(a) Sliding leaves shall be hung from four (4) wheel roller-bearing trolleys and shall be provided with guides, handles, stops and hasp staples as shown on the drawings.

(b) Each swinging leaf shall be equipped with three (3) heavy steel half surface template butt hinges.

(c) All swing doors shall be equipped with Truscon standard mortise cylinder lock with solid bronze face, or lever latch and padlock brackets. Cylinder lock to be equipped with spring bolt operated by lever handles and dead bolt operated by thumb turn from inside and by key from outside.

(d) Where swing doors are hung in pairs one leaf shall be equipped with foot bolt and spring top bolt.

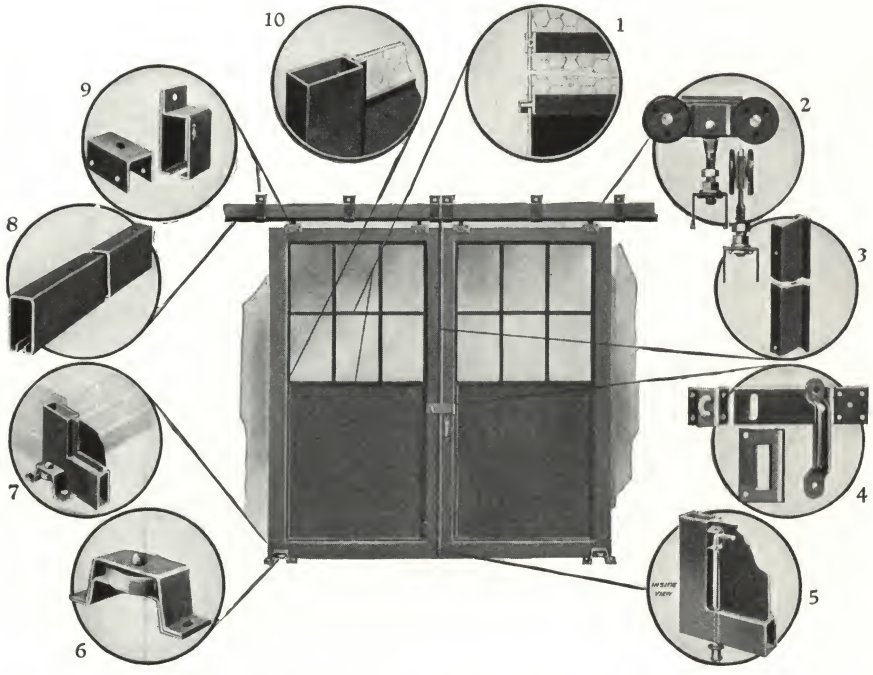
(e) With all double swing or double slide doors, an astragal shall be provided by door manufacturer.

(5) Pressed Steel Door Frame—(a) All Industrial Doors shall be provided with a pressed steel door frame made of 14-gauge steel. Unless otherwise specified, these frames shall be supplied by the door manufacturer.

(b) Frame shall be either fastened directly to the structural steel or shall have anchors built into the masonry. The frame, regardless of jamb anchorage, shall extend 3 in. below finished floor line.

(6) Painting—All doors and frames shall receive one coat of protective paint before shipment.

(7) Erection—The erection of all doors shall be performed by the door manufacturer.



CONSTRUCTION DETAILS

(1) Method of Glazing—Showing muntin bar and glazing angles for holding glass in place.

(2) Carriage of Trolley—Adjustable four-wheel, roller-bearing, extra heavy trolley.

(3) Astragal—Hot-rolled steel, rigidly attached to left hand leaf.

(4) Hardware—Handles for opening and closing. Hasp and staple, for padlocking, attached by through bolts.

(5) Cane Bolt—Placed on left hand leaf on the inside, locking leaf in place.

(6) Roller Guides—For guiding door in its travel, also prevents leaf being pulled away from building.

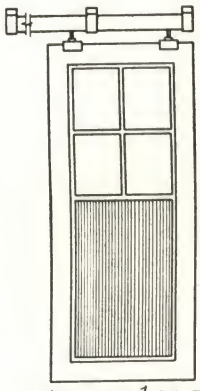
(7) Corner Section—With roller guide in position. Also showing paneling effect obtained on Series 31, steel doors.

(8) Channel Track—Heavy gauge assuring continuous dependable operation.

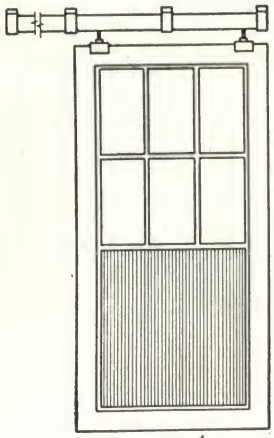
(9) Bracket and Apron—Bracket used to support channel track and apron for overhead trolley.

(10) Jamb Section—Tubular stiles and rails of heavy gauge steel.

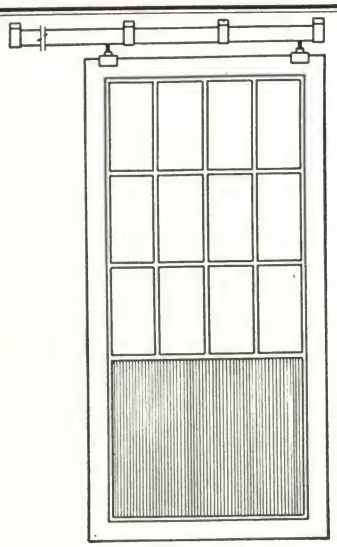
SINGLE DOORS SHOWN ARE COMBINED TO MAKE DOUBLE DOORS LISTED ON CHART BELOW



NO'S 26-70 & 30-70



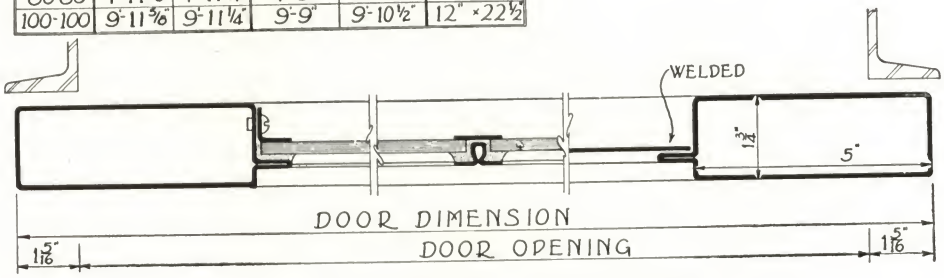
NO'S 36-76 & 40-80



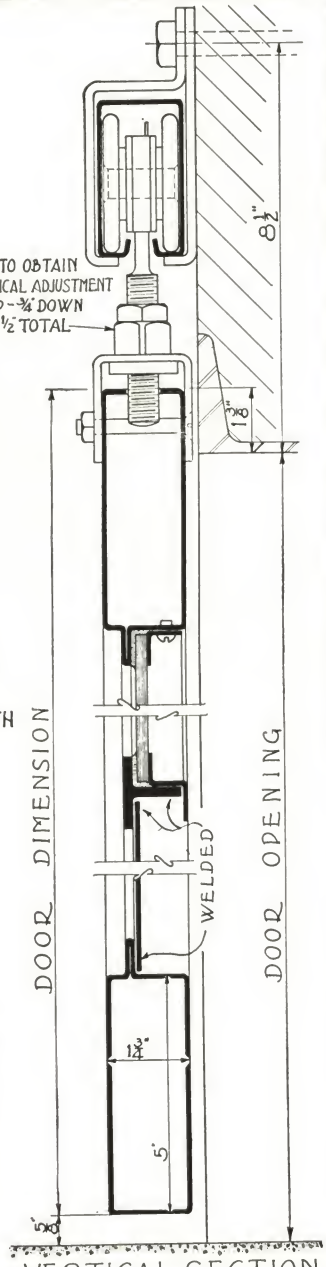
NO 50-100

STOCK SIZES					
DOOR NO.	SIZE OF DOOR WIDTH	SIZE OF DOOR HEIGHT	SIZE OF OPENING WIDTH	SIZE OF OPENING HEIGHT	GLASS SIZE
SINGLE SLIDE					
26-70	2'-5 5/8"	6'-11 1/4"	2'-3"	6'-10 1/2"	9 7/16" × 16"
30-70	2'-11 5/8"	6'-11 1/4"	2'-9"	6'-10 1/2"	12 7/16" × 16"
36-76	3'-5 5/8"	7'-5 1/4"	3'-3"	7'-4 1/2"	10 1/8" × 19"
40-80	3'-11 5/8"	7'-11 1/4"	3'-9"	7'-10 1/2"	12 1/8" × 22"
50-100	4'-11 5/8"	9'-11 1/4"	4'-9"	9'-10 1/2"	12" × 22 1/2"
DOUBLE SLIDE					
50-70	4'-11 5/8"	6'-11 1/4"	4'-9"	6'-10 1/2"	9 7/16" × 16"
60-70	5'-11 5/8"	6'-11 1/4"	5'-9"	6'-10 1/2"	12 7/16" × 16"
70-76	6'-11 5/8"	7'-5 1/4"	6'-9"	7'-4 1/2"	10 1/8" × 19"
80-80	7'-11 5/8"	7'-11 1/4"	7'-9"	7'-10 1/2"	12 1/8" × 22"
100-100	9'-11 5/8"	9'-11 1/4"	9'-9"	9'-10 1/2"	12" × 22 1/2"

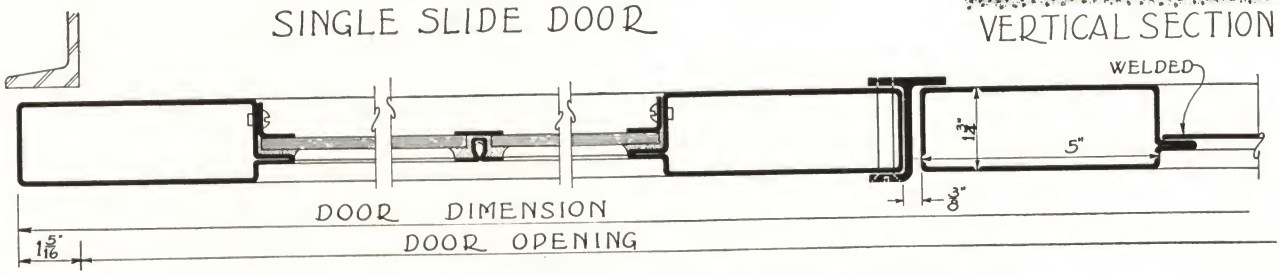
NOTES:
ALL DOORS ARE FURNISHED WITHOUT GLASS. GLAZING ANGLES AND STRIPS, HOWEVER, ARE FURNISHED FOR ALL LIGHTS. DOORS MAY BE FURNISHED WITH SOLID STEEL PANELS IF DESIRED.



HORIZONTAL SECTION
SINGLE SLIDE DOOR



VERTICAL SECTION



HORIZONTAL SECTION ~ DOUBLE SLIDE DOOR

TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD DETAILS - SLIDE UNITS **INDUSTRIAL STEEL DOORS** SERIES 31	PLATE No. **J-2** OCTOBER, 1934

INDUSTRIAL DOORS
FOR LARGE OPENINGS

INDUSTRIAL Doors for large openings meet every requirement of practical use and protection and are designed to fit the conditions of industry. They have been perfected through extensive use in industrial buildings of all kinds and are furnished in practically any size and arrangement, and with any method of operation.

These Doors are made of the best grade of commercial steel. Stiles and rails of tubular steel, mitered, internally reinforced and solidly welded at all corners, give maximum strength.

Primarily designed for large openings, but they are also economical in smaller openings where the doors are subjected to extremely hard and rough usage. Suggestions on types of Industrial Doors to meet special conditions will be furnished without obligation.

SPECIFICATIONS

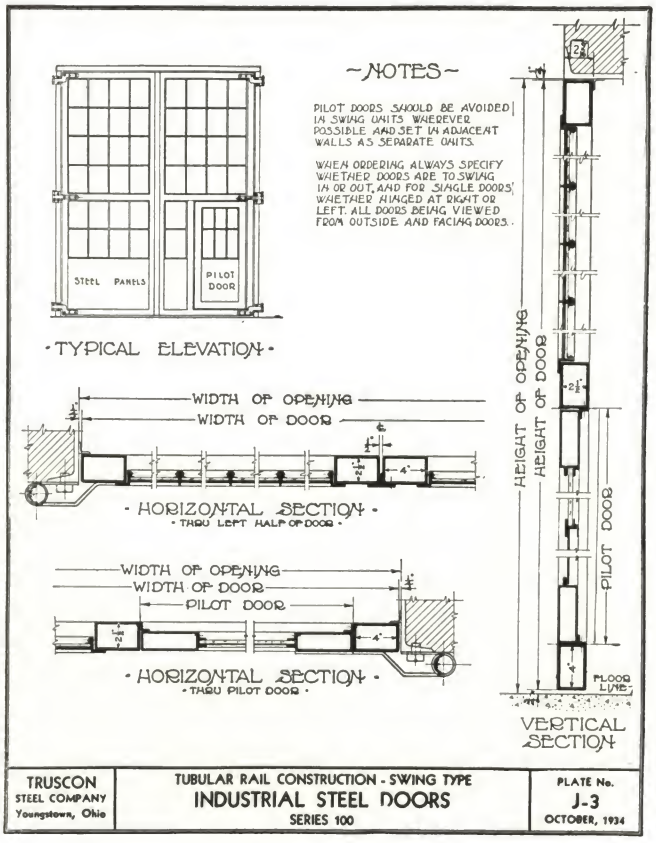
(1) General—All doors shown on drawings as heavy tube doors shall be Industrial Doors, Series 100, as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written consent and approval of the architect.

(2) Material—(a) The stiles, top rail, cross rails and bottom rail, shall be constructed of 13-gauge cold-rolled welded steel tubing, 4x2½ in.

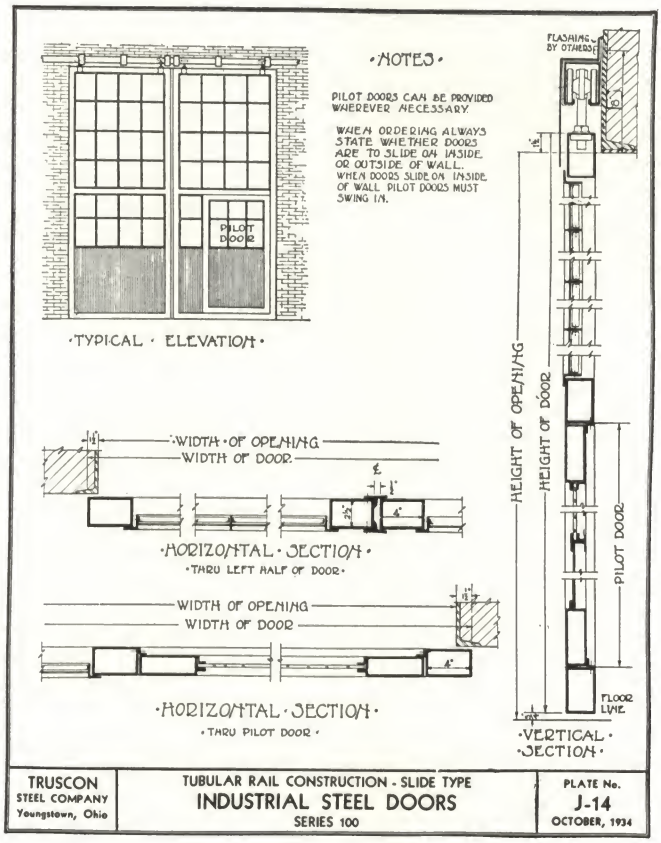
(b) All windows included in doors shall be constructed from hot-rolled new billet steel.

(3) Construction—(a) The corners and intersections shall be welded and ground smooth. Welds must develop the full strength of the section. Corners shall be mitered.

(b) The lower portion of the doors shall be fitted with not less than 13-gauge patent leveled steel panel fastened in place by machine screws.



SERIES 100
Heavy Tubular Rail, Swing and Slide Types



(c) The upper portion of the door shall be fitted with a window built up of Truscon standard members and glazed with glass lights as shown on the drawings. The glass shall be held in place with putty and continuous steel glazing angles.

(d) Mastic shall be applied between window and framing and between steel panel and framing to form weather-tight connections.

(4) Frames—Where shown on the drawings, steel channel frames for all door openings shall be furnished by this contractor.

(5) Hardware—(a) Sliding doors shall be hung from Truscon standard four-wheel trolleys and heavy channel track and shall be equipped with back stops, binders and complete hardware as shown on the drawings.

(b) Swinging doors shall be equipped with Truscon Standard heavy steel strap hinges. (Ball bearing butt hinges can be furnished if specified.)

(c) All swing doors shall be equipped with Truscon Standard mortise cylinder locks (or lever latch and padlock brackets) and heavy handles on inside and out. (Cylinder lock not furnished on leaves larger in area than 60 sq. ft.)

(d) Where swing doors are hung in pairs, one leaf shall be equipped with Truscon standard cane bolt at bottom and spring bolt at top.

(e) An astragal shall be provided by door manufacturer with all double swing or double slide doors.

(6) Painting—All doors and frames shall receive one coat of protective paint before shipment.

(7) Erection—The erection of doors shall be performed by the door manufacturer.

OVERDOORS
OPERATING OVERHEAD

SERIES 204 AND 386

THIS type of door offers many advantages; economy of space, protection from the weather, neat appearance, ease of operation and great practicability.

The spring balances used in Truscon Overdoors are considerably oversize, as are all the other operating parts. The doors are sure to provide a long time of satisfactory service. Overdoors require no drilling, cutting or fitting—all operations, including a coat of paint, are completed in the shop, so that field assembly is reduced to a minimum. The sturdy steel sections are of the finest quality material and workmanship.

Ball-bearing rollers, positive weathering at jambs and high quality cylinder lock are provided on every door.

SPECIFICATIONS
SERIES 204 FOR SMALL OPENINGS

(1) General—All doors shown on the drawings as "Overdoors" shall be as manufactured by the TRUSCON STEEL COMPANY. No substitution shall be made without the written consent or approval of the architect.

(2) Material—The stiles and rails of all leaves shall be constructed from hot-rolled new billet steel. The steel panels shall be constructed from cold-rolled sheets full pickled, reannealed and patent leveled.

(3) Construction—The stiles and rails of all leaves shall be of Truscon Standard Members. All joints shall be mortised and tenoned and air-hammer riveted. One leaf shall be open for glass to be held in place with continuous glazing angles. The balance of the leaves shall be fitted with steel panels held in place with continuous glazing angles and weatherproofed with mastic. The steel panels shall be not less than 18-gauge thickness.

An astragal shall be spot-welded to the top member of each meeting rail to insure weathering between each leaf.

(4) Hardware—Doors shall be complete with Truscon Standard Hardware for Spring Operation. Hardware shall consist of all necessary rollers, track, weathering for jambs, lift handles and cylinder lock. A pull-down cord shall be provided.

(5) Painting—All doors shall be given one coat of protective paint before shipment.

(6) Erection—The erection of all doors shall be performed by the manufacturer.

SPECIFICATIONS
SERIES 386 FOR LARGE OPENINGS

(1) General—All doors shown on drawings and so marked shall be of the Overdoor Type, Series 386 as manufactured by the TRUSCON STEEL COMPANY, Youngstown, Ohio. No substitution shall be made without the written consent and approval of the architect.

(2) Construction—(a) Generally, outside frame members shall be made of special channel sections, with mitered corners welded and ground smooth. An astragal shall be spot welded to top member of each meeting rail to insure weathering between leaves.

(b) Glass panels shall be arranged for inside putty glazing with continuous glazing angles.

(c) Solid steel panels shall be made of 18-gauge patent leveled sheets held in place with continuous glazing angles and weatherproofed with mastic.

(3) Operation—All doors shall be counterbalanced by springs lying overhead in a horizontal position. In addition, a geared hand chain operator shall be provided on all doors. Locking shall be by means of a throw bolt placed on inside at one jamb.

(4) Painting—All doors shall receive one coat of protective paint before shipment.

(5) Erection—Erection of all doors shall be performed by the door manufacturer.

ACCORDION DOORS

SERIES 500HT AND 500LT

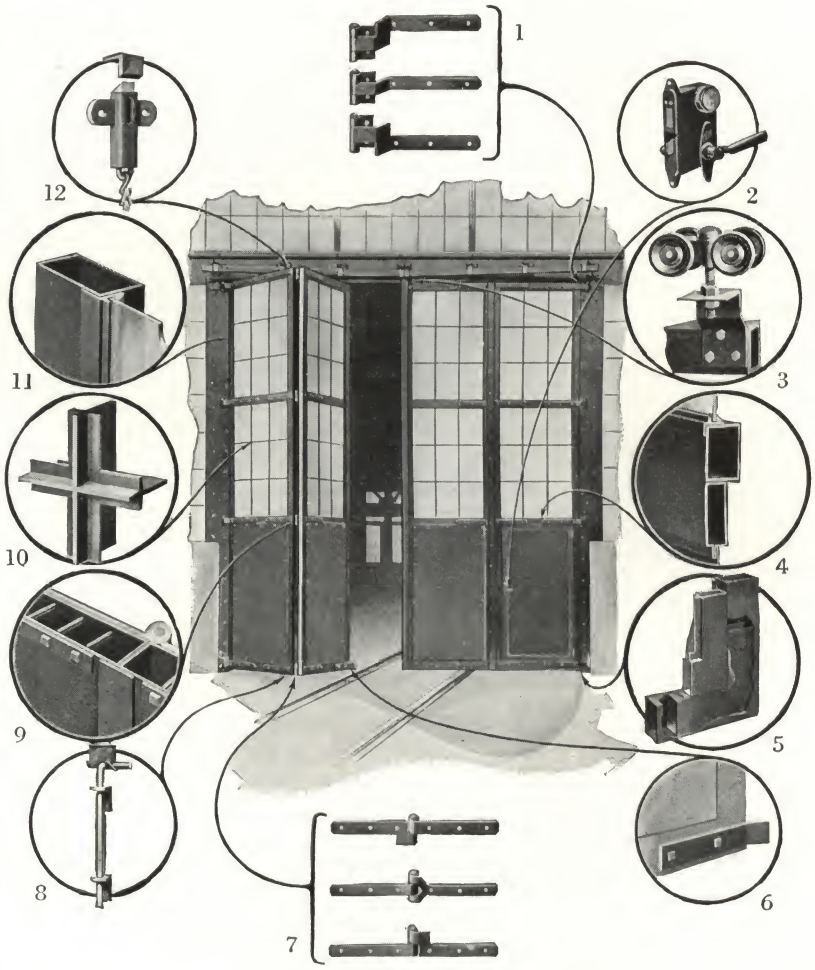
THESE doors are used extensively in railroad structures and other buildings requiring maximum height of door opening with minimum obstruction. They are particularly adaptable in extremely wide or high openings where a swing door would ordinarily be used.

In operation, the leaves fold against one another and since they cannot bind or jam, one person can open or close them easily. They are hung at the top from heavy four-wheel roller and ball-bearing swivel trolleys, running in a heavy channel track placed above the opening. They are shipped with complete hardware, such as track, brackets, trolleys, hinges, cane bolts and binders.

Stiles and rails are made from tubing. For Series 500HT, 4x2½ in. 13-gauge tube is standard; for Series 500LT, standard industrial tube 1¾x5 in. 14-gauge is used. The large tube is used when doors are for extremely large openings or for smaller doors subject to unusually rough and hard treatment. For openings receiving ordinary usage, the lighter tube will give years of uninterrupted service.

These doors are furnished with steel windows in the upper portion, although, if desired, they can be furnished with solid steel panels throughout.

Besides adding permanently good appearance to a building, Truscon Accordion Steel Doors afford greatly improved weather protection and long life. Maintenance has proved remarkably low because of their rigid construction and inherent permanent qualities.



SPECIFICATIONS

Series 500HT and 500LT

(1) General—All doors shown on drawings and marked as such shall be Accordion Steel Doors as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitutions shall be made without the written consent and approval of the architect.

(2) Material—(a) For Series 500HT, all stiles and rails shall be made 4x2½ in., 13-gauge cold-rolled welded steel tubing.

(b) For Series 500LT, all stiles and rails shall be made from Truscon Industrial tube 1¾x5 in., 14-gauge.

(c) All steel windows in door leaves shall be of Truscon standard design and made from Truscon specification new billet steel.

(3) Construction—(a) All corners and intersections shall be welded and ground smooth. The weld must develop the full strength of the section.

(b) Series 500HT—The lower portion of the doors shall be fitted with 13-gauge patent leveled steel sheets.

Series 500LT—The steel panels shall not be less than 18-gauge patent leveled steel sheets.

(c) The upper portion shall be fitted with steel windows according to Truscon standard design.

(4) Frames—As shown on the drawings, steel channel frames for all door openings shall be furnished and installed by the contractor furnishing structural steel.

(5) Hardware—(a) Doors shall be equipped with Truscon standard heavy steel hinges, track, brackets, trolleys and complete hardware.

(b) Pilot doors, where shown, shall be fitted with cylinder spring latch and dead bolt heavy mortise cylinder lock (or lever latch with padlock brackets) and heavy steel handles.

(c) Each opening having four leaves, two of which fold to each jamb, shall have two (2) cane bolts at the bottom and two (2) spring bolts at the top, one set for each pair of leaves.

(d) Standard astragals shall be furnished as weathering between all leaves.

(6) Painting—All doors shall receive one coat of protective paint before shipment.

(7) Erection—The erection of doors shall be performed by the door manufacturer.

CONSTRUCTION DETAILS

Series 500HT

(1) Heavy Strap Hinges—These specially designed hinges are wrought forged of heavy material and attached with bolts through door.

(2) Cylinder Lock—For Pilot Door may be locked from either side.

(3) Specially Designed Trolley—This four-wheel swivel, roller-bearing trolley gives strength and ease of operation.

(4) Construction of Pilot Door—Showing application of Pilot Door in large Accordion Doors.

(5) Construction of Corners—Corner reinforcements furnished with all heavy tube door leaves.

(6) Bottom Strap—Special strap used at bottom to guide doors in alignment when being closed.

(7) Heavy Strap Inside Hinges—Wrought of heavy material, specially designed for use on the inside of the door and securely attached with bolts through door.

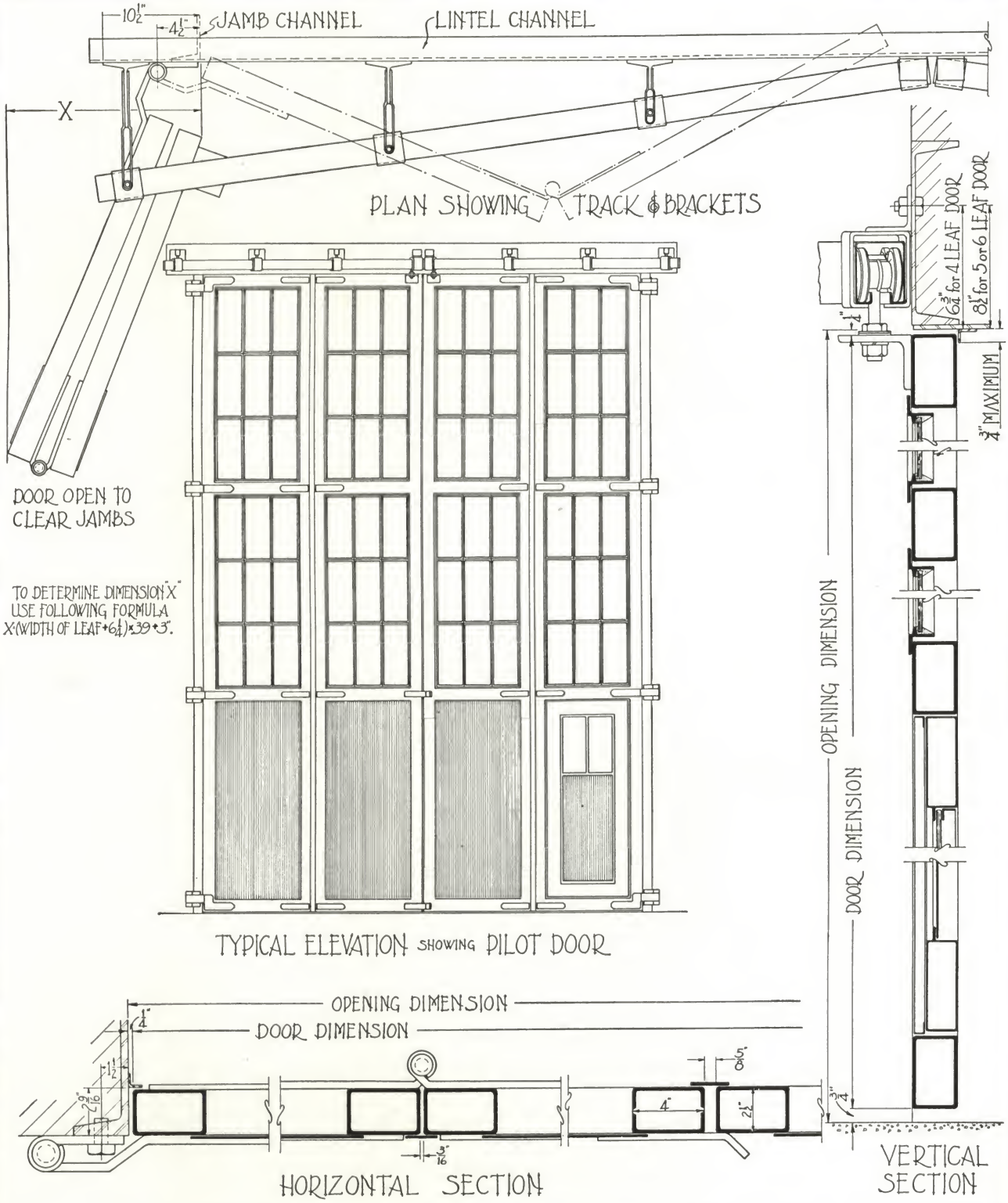
(8) Cane Bolt—Heavy designed cane bolt attached to inside of door leaves.

(9) Construction of Doors—Showing astragal, hinge and tube.

(10) Steel Sash Joint—Showing the dovetail mitered joint used in construction of steel sash in upper portion of door.

(11) Tubular Door Stile—Detail showing steel sash and tube rail of door.

(12) Chain Bolt—Specially designed extra heavy chain bolt used to fasten door at top.



TRUSCON STEEL COMPANY Youngstown, Ohio	TUBULAR RAIL CONSTRUCTION **ACCORDION STEEL DOORS** SERIES 500 H. T.	PLATE No. **J-4** OCTOBER, 1934

MORGAN AIRPLANE HANGAR DOORS

THE Morgan Door represents the latest design of an electrically operated Canopy Door for large openings exceeding 100 feet in width and 25 feet or over in height. It is a door designed to withstand and operate against heavy wind loads and in so doing it transmits both live and dead loads directly to the building structure in a positive manner.

The Morgan Door requires very little space above the lintel to house operating mechanism which is simple and compact but very positive in its action.

The operating mechanism consists of two opposing racks, pinions, idlers and motor reducer unit together with the proper electrical control equipment to guarantee efficient and safe operation. All working parts are equipped with roller bearings and fittings for pressure lubrication.

The door is lifted by short lengths of cables fastened to the lower leaf and to the rigid operating members above the lintel. Counterweights that counterbalance the dead weight of the door are fastened to one end of each of the two racks. In these continuous connections, at a point where the power is applied are inserted the two opposing racks which transmits positive power. The use of rigid members wherever possible and short lengths of cable all of equal length minimizes and equalizes the stretch of the cable which will result in minor cable adjustments.

A system of arms, links and struts, cantilevered from the ceiling, in conjunction with rollers operating in an overhead track control the vertical structural members or posts which serve as the supports for the door facing. This combination of supports is spaced at intervals, usually about seventeen (17) feet apart, across the entire door opening and serve as mobile bracing so that the door can be designed to operate against any specified wind load without undue or dangerous deflection. The geometry of the supporting members is such that all reactions and stresses can be determined by the principles of statics for all partly open positions as well as for the fully open position of the door. In a closed position the posts are securely fastened automatically at the lintel and the floor becoming a rigid fixed member.

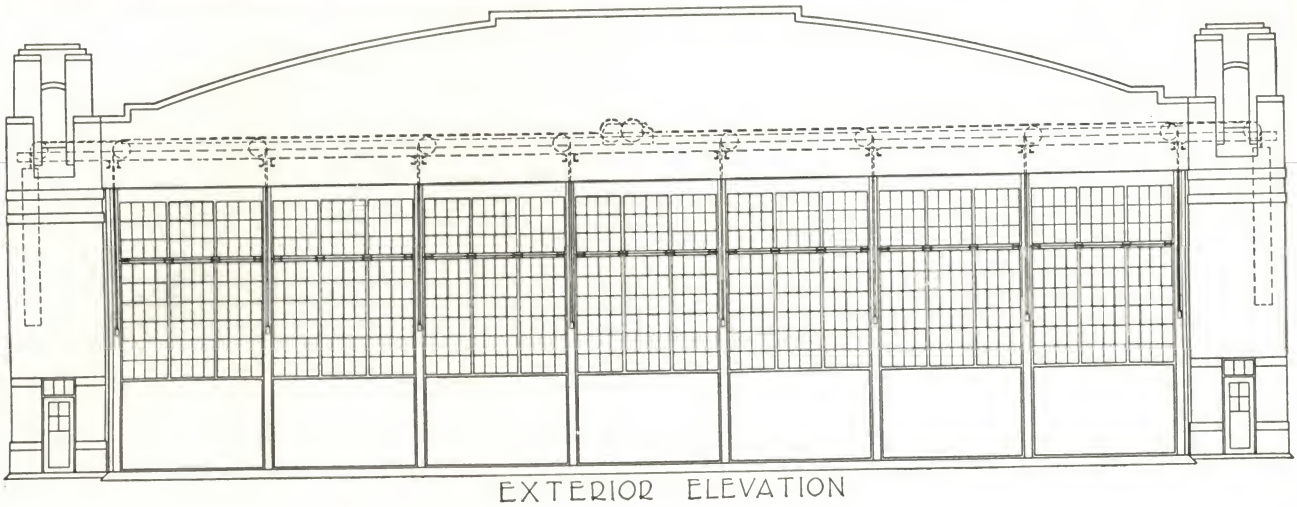
The door facing is divided horizontally into two leaves, the top one being hinged to the lintel and the bottom one hinged to the top leaf. As the door is lifted by the cables, the door leaves fold together, the top leaf entirely inside the building behind the lintel and the bottom leaf part inside and part outside to form a canopy over the opening. The top leaf serves as a baffle to prevent the wind from blowing in over the top of the door to damage the roof covering and to disturb the heat which collects near the roof.

The Morgan Door has been correctly designed and engineered to perform efficiently the proper functions of an airplane hangar door. It has the stability and rigidity typical of all well designed structures. At all stages of opening, there is a distinct position of equilibrium, always the same regardless of the magnitude of the lateral forces.

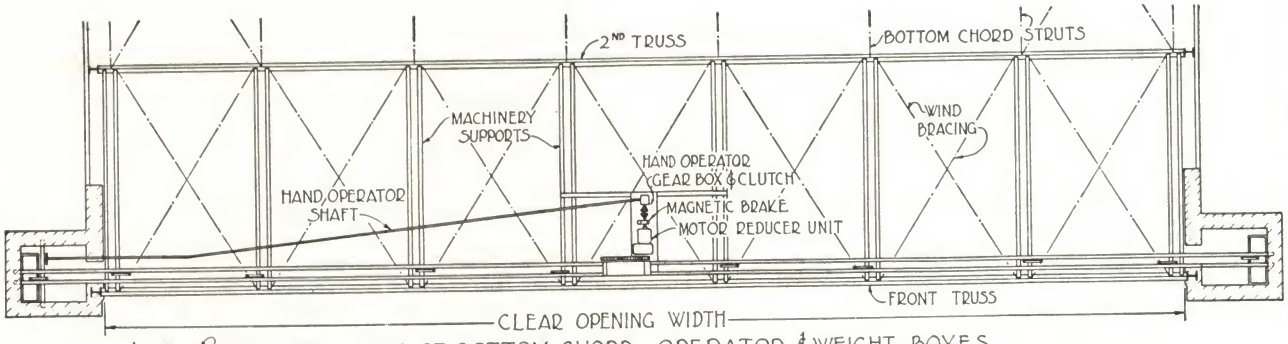
POINTS OF SUPERIORITY

1. All loads are distributed through structural steel.
2. It is held in the opening by mobile structural bracing.
3. It will operate against the specified wind load without undue or dangerous deflection.
4. One opening can be divided into any number of separate operating sections.
5. It will protect the roof covering and conserve heat.

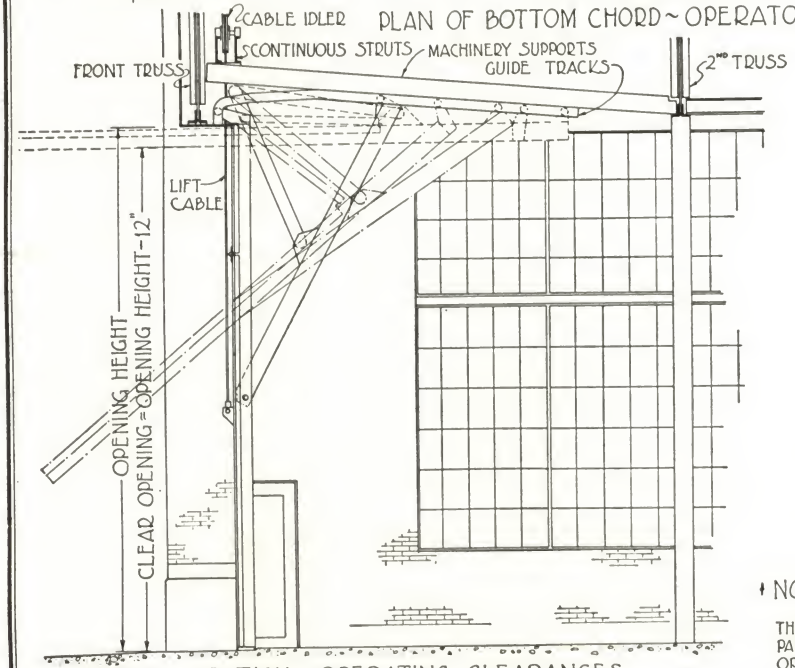
United States Coast Guard Hangar, Salem, Mass.
Truscon Morgan Type Steel Doors — Marden Construction Co., Inc., Contractors



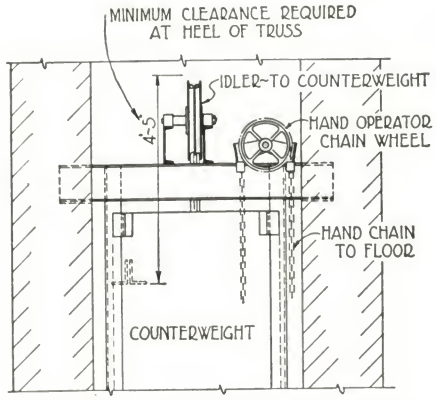
EXTERIOR ELEVATION



PLAN OF BOTTOM CHORD ~ OPERATOR & WEIGHT BOXES



VERTICAL SECTION ~ OPERATING CLEARANCES



VERTICAL SECTION THRU TOWER
SHOWING WEIGHT BOX

NOTE

DOOR MOVEMENT IS CONTROLLED BY LIMIT SWITCHES. THREE BUTTON CONTROL STATION AND REVERSING RELAY PANEL ARE LOCATED ON SIDEWALL ADJACENT TO JAMB OF OPENING. EXACT LOCATION TO BE DETERMINED BY ARCHITECT.

TRUSCON STEEL COMPANY Youngstown, Ohio	ELEVATION AND CONSTRUCTION DETAILS **MORGAN TYPE STEEL DOORS**	PLATE No. **J-40** OCTOBER, 1934

INSULMESH

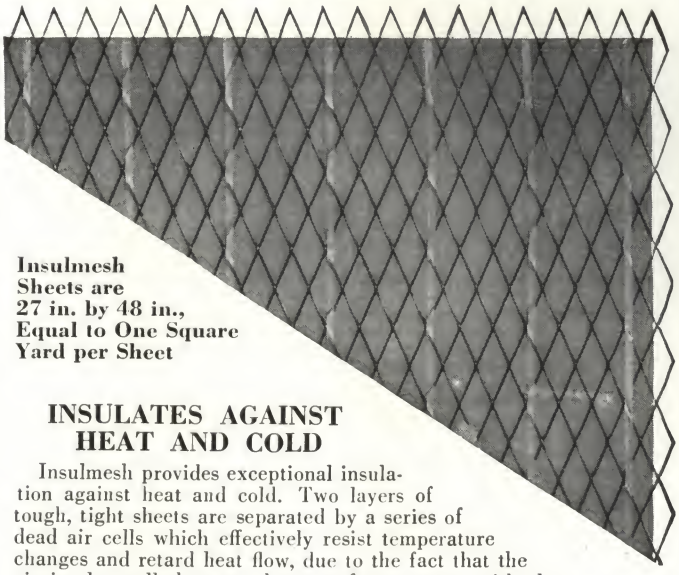
Patent Applied For

A Plaster Base that Deadens Sound—Insulates and Reinforces

AN EXCLUSIVE plaster base, consisting of expanded metal which is firmly fastened to a specially treated, ⅜ in. thick waterproofed backing that insulates against heat, cold and sound. Adhesive strips hold the mesh in place until the sheets are erected, then the nails or staples used to attach the Insulmesh to the studs or joists carry the load. Through the use of the strips, puncturing of the insulation is obviated.

New improvements have been made in the insulating backing. The material is heavier and a new waterproofing, developed especially for it by The Truscon Laboratories, improves the quality considerably. This backing consists of two flat sheets which form the chords of a truss, with a corrugated center section forming the web member, thus developing a remarkable strength. Dead air spaces, created by the corrugated center section, have a very high insulating value against heat, cold and sound.

Insulmesh combines in one product: remarkable sound-deadening qualities, the low first cost of wood lath, the crack prevention and firesafety of metal lath and the plaster economy and insulating ability of fibre and plaster boards.



Insulmesh Sheets are 27 in. by 48 in., Equal to One Square Yard per Sheet

SUPERIOR REINFORCEMENT

The mesh is made from 22-gauge steel, expanded into diamonds 1½ x 3 in. This diamond-shaped mesh perfectly diffuses the stresses of concentrated loads, affords continuity of reinforcement and assures that every ounce of the metal is effective to resist tensile stresses. The expansion process causes it to become practically self-furring, so that when the plaster is applied, the steel becomes entirely embedded, affording a thorough reinforcing.

CONTINUOUS REINFORCEMENT

The diamond-shaped mesh extends beyond one side and end of the corrugated backing so that the metal laps at all joints, insuring uniform strength and preventing plaster cracks.

ECONOMICAL TO PLASTER

The rigidity of the sheet makes it easy to plaster over and level off. No plaster is wasted, for every particle goes on the surface. The mesh takes the plaster from the trowel and holds it in place. In effect, the entire job is "back-plastered."

INSULATES AGAINST HEAT AND COLD

Insulmesh provides exceptional insulation against heat and cold. Two layers of tough, tight sheets are separated by a series of dead air cells which effectively resist temperature changes and retard heat flow, due to the fact that the air in the wall does not have surface contact with the plaster. Insulmesh is the only plaster base which provides this air-cell insulation, in combination with steel reinforcing for the plaster.

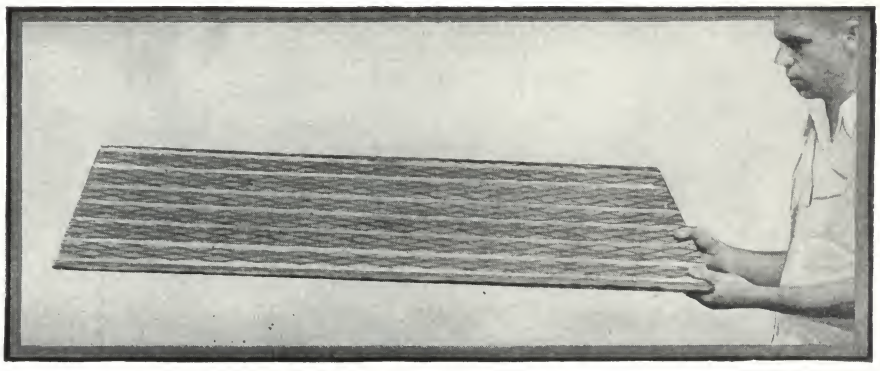
SOUND-PROOFS

Insulmesh has remarkable sound-deadening qualities. The largest proportion of sound reduction is obtained through absorption by the dead air cells but, in addition, the rigid surface of Insulmesh reflects a certain amount. The fact that the absorbing surface is backed by the relatively dense, rigid plaster develops an ideal condition for retarding the passage of the sound waves.

SUITABLE FOR STUCCO

Insulmesh makes an excellent stucco base, for it performs the dual function of reinforcing the stucco with steel and serving as an insulating sheathing, or as an insulation over wood sheathing. The large-sized sheets are easy to erect and the overlapping joints give a continuous steel reinforcing.

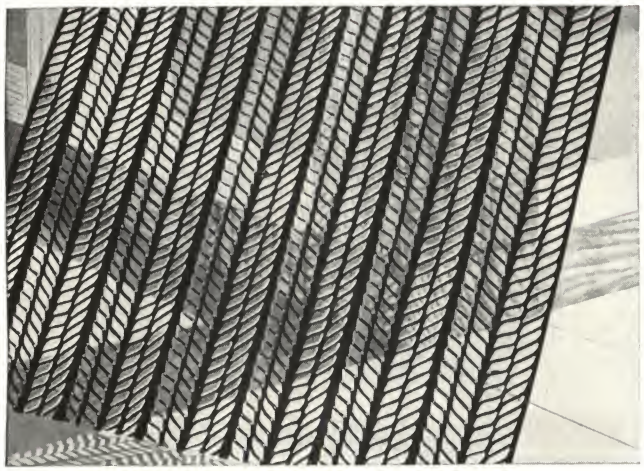
Sturdy Cartons, Containing 40 Sheets, Protect the Product and Facilitate Handling and Storage



Rigid Sheets Speed Erection

METAL LATH PRODUCTS
AND ACCESSORIES

For Crackproof, Firesafe and Economical Plaster Bases

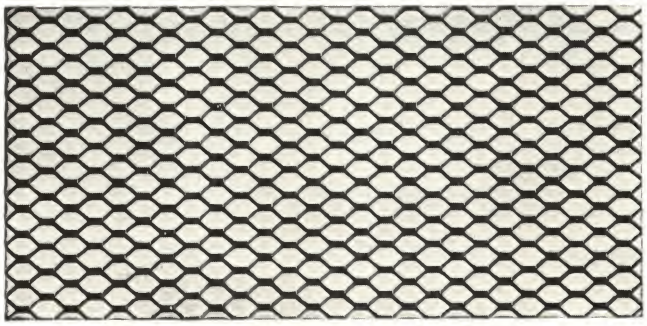


Herringbone Doublemesh Lath

HERRINGBONE DOUBLEMESH LATH

Doublemesh has the smallest mesh of any expanded lath and at the same time is the most rigid. This rigidity is obtained by a series of parallel reinforcing ribs that run lengthwise of the sheet. The sheets require no stretching and do not sag between supports so that studs may be placed further apart without sacrifice to the strength of the walls.

Weight per square yard				Sizes of sheets, in.	Sheets per bundle	Yards per bundle
Painted	Galvanized	Copper-bearing	Toncan or Armco Iron			
2.75	...	...	...	24x96	9	16
3.0	...	3.0	3.0	24x96	9	16
3.4	3.4	3.4	3.4	24x96	9	16



Diamond Lath

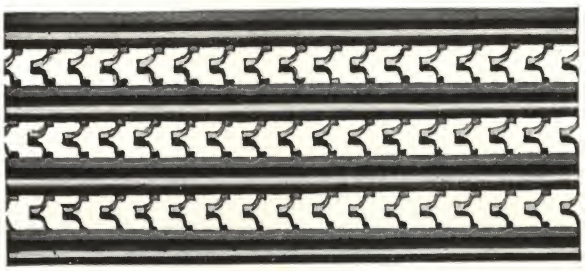
DIAMOND LATH

Truscon Diamond Laths are considered the most practical types of diamond lath on the market. Sheets are trimmed exactly 8 ft. 1 in. in length, with edges absolutely straight. The diamonds are small size, preventing workmen from wasting materials due to excessive pressure forcing plaster through on back side.

PROPERTIES, DIAMOND LATH AND SMALL MESH DIAMOND LATH

Weight yard	Length sheet, in.	Width sheet, in.	Sq. yds. sheet	Sheets bundle	Sq. yds. bundle	Weight bundle, lbs.
2.2	96	27	2	10	20	44
2.5	96	27	2	10	20	50
3.0	96	27	2	10	20	60
3.4	96	27	2	10	20	68
		Galvanized				
2.5	96	27	2	10	20	50
3.4	96	27	2	10	20	68

Can be furnished in either open hearth or copper-bearing steel. All material excepting galvanized is painted.

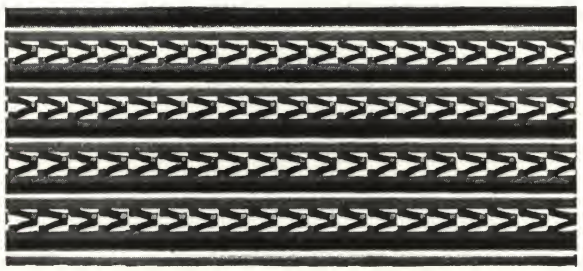


1-A METAL LATH

Sharply defined ribs ½ in. wide, spaced $\frac{9}{16}$ in. apart, running full length of the sheet, provide a rigid plastering surface and resist the penetration and waste of excess plaster through the mesh. Two keys and four rudder-like projections per square inch provide a tenacious mechanical "key" for the plaster that is practically automatic with slight pressure.

Weight per square yard		Maximum stud spacing, in.		Maximum joist spacing, in.	
3.0 lbs.		20		20	
Length sheet, in.	Width sheet, in.	Sq. yd. per sheet	Sheets per bdle.	Sq. yds. per bdle.	Weight per bdle.
96	24	1 7/9	9	16	48

Can be furnished in open hearth or copper-bearing steel—all painted.

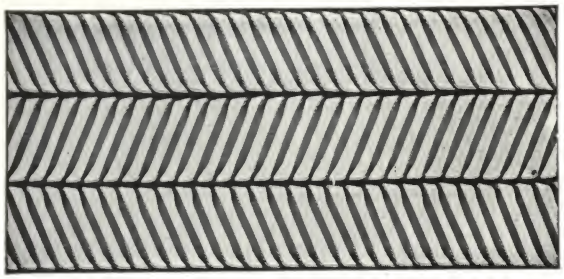


2-A METAL LATH

Truscon 2-A Metal Lath combines the smooth surface of sheet lath with the great rigidity and bond which are features of all Truscon A-Laths, Truscon 2-A Metal Lath is unequalled as a base for plaster. Its flat surface means speedy application of plaster and its closely spaced keys eliminate wastage.

Weight per square yard		Maximum stud spacing, in.		Maximum joist spacing, in.	
3.4 lbs.		24		24	
Length sheet, in.	Width sheet, in.	Sq. yd. per sheet	Sheets per bdle.	Sq. yds. per bdle.	Weight per bdle.
96	22⅞	1 7/10	10	17	57.8

Can be furnished in open hearth or copper-bearing steel—all painted.



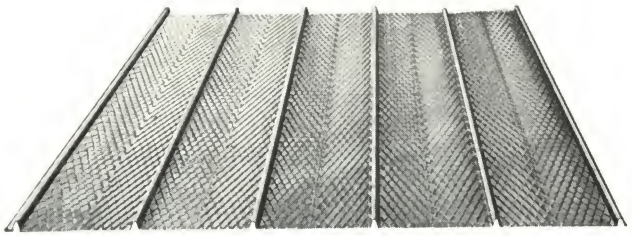
HERRINGBONE RIGID LATH

Herringbone Rigid Lath has the same general advantages as "Doublemesh," the difference being in the size of the mesh. It has the same rigidity, the same interlocking edges and forms the same remarkable key.

The ribs form "shelves" which hold the plaster from falling in back, so that every bit applied is held in place.

When used for partitions, either solid or hollow, Herringbone Rigid Lath offers the same construction and erection economies as when used for ceilings. The spacing of the studs may be increased from 16 in. for the 2.5 pound flat lath to 19½ in. for the 3 pound Herringbone.

Weight per square yard				Sizes of sheets in.	Sheets per bundle	Yards per bundle
Painted	Galvanized	Copper-bearing	Toncan or Armco Iron			
2.2	.....	2.2	2.2	20¼x96	15	22½
2.5	2.5	2.5	2.5	20¼x96	15	22½
3.0	.....	3.0	3.0	20¼x96	15	22½
3.4	3.4	3.4	3.4	20¼x96	15	22½



⅜" DIAMOND RIB LATH

A self-furring lath with ⅜ in. deep ribs, which permits wide spacing of supports. Used principally as a base for plaster on ceilings, straight-away partition work with channels and for exterior stucco. It is particularly recommended as a base for plaster under steel joists and as a reinforcement for concrete slabs over steel joists. ⅜ in. Diamond Lath is manufactured with the rib integral with the mesh. ⅜ in. deep ribs spaced 4¾ in. on centers run full length of the sheet with the distance between the ribs spanned by rows of small size diamonds.

PROPERTIES, ⅜" DIAMOND RIB LATH

Weights per sq. yd.		Size of sheets, in.	Ribs spaced c-c, in.	Area of sheets per sq. yd.	Sheets per bundle	Yards per bundle
Painted	Copper bearing					
3.0	3.0	24x96	4.8	1-7/9	9	16
3.4	3.4	24x96	4.8	1-7/9	9	16
4.0	...	24x96	4.8	1-7/9	9	16

OTHER LATHS

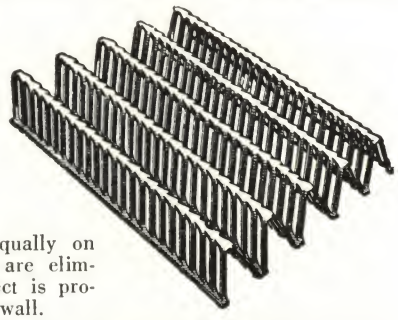
Metal Plasterbord, Sheet Lath, Stucco-Steel, ¾ in. Hy-Rib, ⅜ in. Hy-Rib.

TRUSSIT

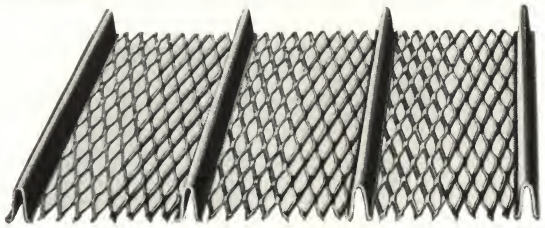
A specialized building product, designed for the purpose of reinforcing and forming fire-resistive concrete walls and partitions.

The use of Trussit as a reinforcement for solid exterior walls gives a construction in which the reinforcing is centrally located in the wall, producing a slab of uniform strength throughout.

Walls are quickly erected without forms, the cement plaster being applied to the Trussit equally on both sides. Form marks are eliminated and a pleasing effect is produced on each face of the wall.



	Length, ft.	Width, in.	Weight per sq. ft.
Painted	8, 10, 12	19	.57, .62 and .83 lbs.
Galvanized	8, 10, 12	19	.68, .88 lbs.
Toncan or Armco.	8, 10, 12	19	.57, .62 and .83 lbs.



SELF-SENTERING

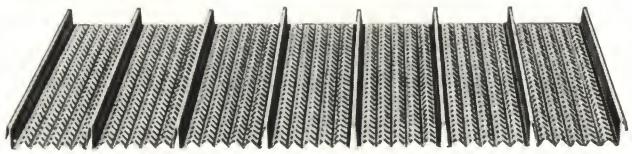
Self-Sentering is a ribbed expansion metal for concrete reinforcing and miscellaneous firesafe construction. It serves as both form and reinforcement for concrete floor work and as a combined steel lath and studding for walls and partitions.

Weight	Slab thickness							
	2 in.		2½ in.		3 in.		3½ in.	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.
.56 lbs.	3	3	3	0	2	9	2	6
.65 lbs.	3	6	3	3	3	0	2	9
.75 lbs.	4	0	3	8	3	4	3	0

WEIGHTS AND SECTIONAL AREAS

Painted steel weight, per sq. ft.	Effective sectional area, per ft. of width	Standard lengths, ft.
.56 lbs.	.167 sq. in.	8, 10 and 12
.65 lbs.	.193 sq. in.	8, 10 and 12
.75 lbs.	.223 sq. in.	8, 10 and 12

Galvanized, Copper-bearing, or Armco Self-Sentering on mill shipment, minimum of five tons one weight and length.



Truscon ¾ in. Hy-Rib is a concrete reinforcement for floors, roofs, tanks and arches and for arched floors, balconies and other construction, where expensive wood forming is usually required.

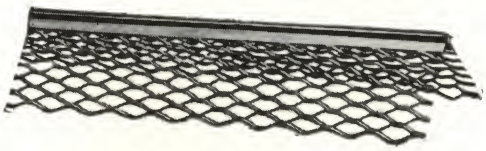
PROPERTIES

Weight per sq. ft., lbs.	Height of ribs, in.	Ribs spaced c-c, in.	No. Ribs per sheet	Width of sheet, in.	Effective sectional area per ft. of width, sq. in.
.58	¾	4	8	28	.1152
.68	¾	4	8	28	.1407
.78	¾	4	8	28	.1642

Length sheet, ft.	Width sheet, in.	Sq. ft. per sheet	Sheets per bundle	Sq. ft. per bundle	Wt. per bundle		
					.58 lb. per sq. ft.	.68 lb. per sq. ft.	.78 lb. per sq. ft.
6	28	14	8	112	65.0	76.1	87.4
8	28	18⅔	8	149⅓	86.6	101.6	116.5
10	28	23⅓	8	186⅔	108.3	126.9	145.6
12	28	28	8	224	129.9	152.3	174.7

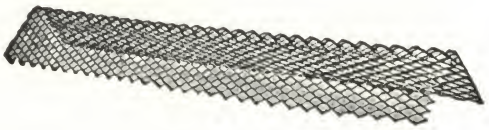
Can be furnished in either Copper-Bearing or Open Hearth Steel—all painted.

METAL LATH ACCESSORIES



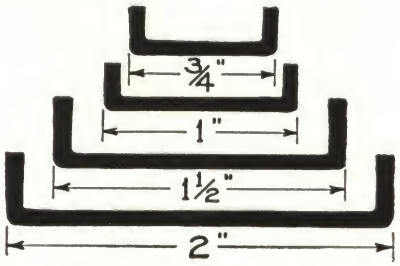
EXPANDED CORNER BEAD

Expanded corner bead weighs 0.21 pounds per lin. ft. furnished in 6, 7, 8, 9, 10 and 12-ft. lengths, bundled 10 pieces to the bundle. It can be furnished cut from zinc strip if desired.



CORNERITE

Cornerites are used for plaster base at inside corners. Flanges are 4 in. wide, sheets 8 ft. 1 in. long, bundled in lots of 25 pieces or 400 ft. Protected with a coat of black asphalt paint.



COLD ROLLED CHANNELS

Size, ins., ¾, 1, 1½, 2.
Weight in pounds per lin. ft., .276, .332, .442, .553.
No. 16 gauge (thickness .065 in.).
¾ and 1 in. shipped packed in bundles of 25 channels, and 1½ and 2 in., 10 in a bundle.

WIDE FLANGED CORNER BEAD

Especially adapted to all nail-on work.
Weight 330 lbs. per 1000 ft. Manufactured from 26 gauge best grade steel and furnished in standard lengths 6, 7, 8, 9, 10 and 12 ft., packed 10 pieces to the bundle.

RIB STEEL CORNER BEAD

Lengths, 6, 8, 9, 10 and 12 ft.
Packed 10 pieces to bundle—10 bundles to crate.
Crate weight, 20 lbs. per 1000 ft. Manufactured from 26 gauge high grade steel.

BULL NOSE CORNER BEAD

¾-in. radius. Medium length flange. 24 Gauge. Shipping weight approximately 420 lbs. per 1000 ft.
Standard lengths, 6, 7, 8, 9, 10, 11 and 12 ft.

FERROCLAD STRUCTURAL PANELS

STEEL or non-ferrous metal on one or both sides with insulated, acoustic, fire-resisting or rigid type cores, manufactured in panel sizes up to 4 ft. x 12 ft. and in any thickness from ⅛ in. upwards. Metal faced and core material cemented together under hydraulic pressure with a non-corrosive, waterproof cement capable of withstanding temperature between minus 110 degrees to 850 degrees, without giving off odors or having any deterioration.

PANEL TYPES

Ferroclad Insulated Structural Panels—Internal conductance .33 B.t.u. per square foot per hour per degree of temperature difference per inch thickness. Can be used between temperatures of 0 degrees to 250 degrees Fahrenheit.

Ferroclad Acousti-Panels—Internal conductance .33 B.t.u. per square foot per hour per degree of temperature difference. Sound absorption co-efficient .30, .47 or .70.

Recommended for:

Dryers and Kilns, Low and High Temperature
Rigid Radiator Enclosures and Conduits
Insulation Backs for Radiators
Insulated Ceilings, Wall or Roof Construction
Air Duct Construction
Refrigerators and Cold Storage Plants
Blower and Fan Panel Construction
Panels for Oven Construction
Panels for Residential Furnace and Boiler Construction
Panels for Air Cleaning, Cooling and Humidifying Equipment

"O-T" OPEN TRUSS STEEL JOISTS

For Economical and Fireproof Floors

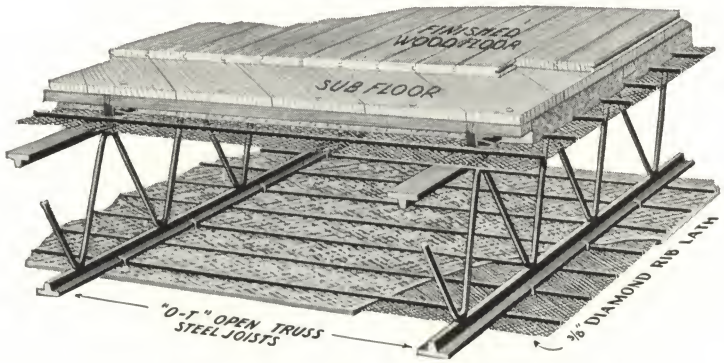
Designed and manufactured in accordance with the specifications of the Steel Joist Institute and the Simplified Practice Recommendations (S.P.R. 9430) on Open Web Steel Joists as issued by the U. S. Department of Commerce, Bureau of Standards.

TO meet the demand for economical, light weight and fireproof floors, Truscon has developed the "O-T" Open Truss Steel Joist which is designed according to the best engineering practice and offers many advantageous and distinctive features. In effect, the entire design is unusually efficient as well as exceptionally economical of materials.

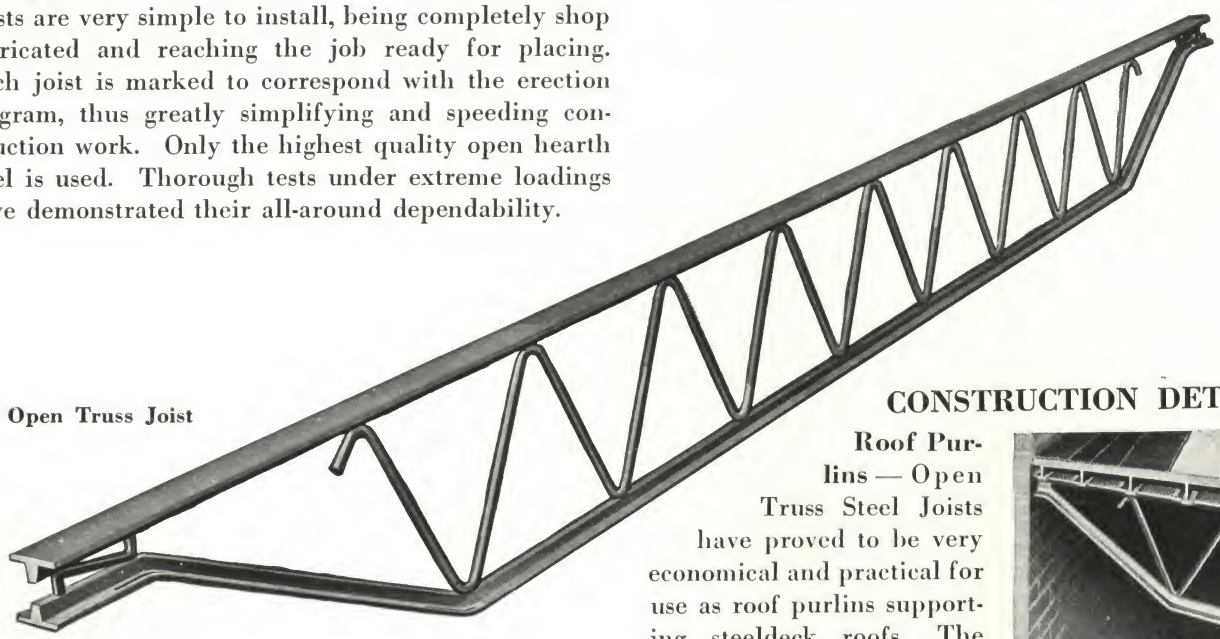
Fundamentally, the Truscon "O-T" Open Truss Steel Joist is a Warren truss having top and bottom chords of wide tee-shaped members to provide the greatest resistance to buckling strains. The bottom tee is continuous to the bearings, where it is welded with the web member and the top chord. Web members are continuous from end to end so that stresses are transmitted perfectly. High pressure electric welding is used to make positive connections at all joints.

The underslung design of the bearing permits maximum headroom under the supporting girders. The open web allows the passage of pipes and conduits of any number and in any direction.

In practical use Truscon "O-T" Open Truss Steel Joists are very simple to install, being completely shop fabricated and reaching the job ready for placing. Each joist is marked to correspond with the erection diagram, thus greatly simplifying and speeding construction work. Only the highest quality open hearth steel is used. Thorough tests under extreme loadings have demonstrated their all-around dependability.



Truscon Open Truss Steel Joist Construction with Finished Floor of Wood Secured by Means of Screeds placed at Right Angles to the Joists and Elevated to Provide for Concrete Underneath

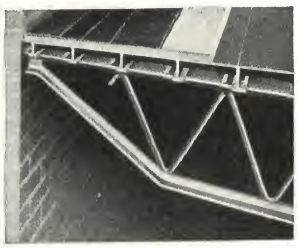


Open Truss Joist

ADAPTABILITY

Truscon "O-T" Open Truss Steel Joists are adaptable to all types of buildings, regardless of their location, and in small buildings at practically the same cost per square foot as in skyscrapers. Fireproof construction is thus made available in many buildings where other systems of fireproof construction would not be practical.

CONSTRUCTION DETAILS



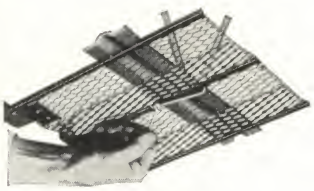
Roof Purlins

Roof Purlins — Open Truss Steel Joists have proved to be very economical and practical for use as roof purlins supporting steeldeck roofs. The method of attaching the roof to the steel joists is very simple and positive, as shown in illustration.

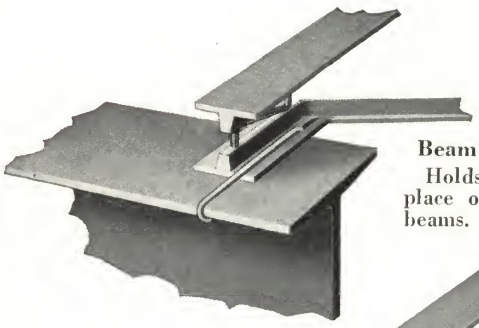
Nailing Screed—Occasionally, it is desired to attach a wood roof deck to Truscon "O-T" Open Truss Steel Joists used as roof purlins. Nailing screeds are required in this construction and they may be attached either directly over the joists or at right angles to them.

ACCESSORIES

Bottom Chord Extension
Easily attached after the steel joists are in place.



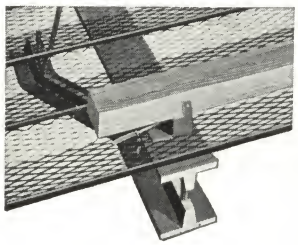
Lath Clips
Made in different sizes to meet the different sizes of joist members. When attaching the ceiling lath, the clips should straddle the lath rib.



Beam Anchor No. 3
Holds the joists in place on structural steel beams.

Wall Anchor No. 5
Affords additional bond between floor and wall construction when wall is of such a height or nature as to be not self-sustaining.

Strut Bridging
Made of ¾ in. box channels and cut to lengths to meet exact spacing of joists. Simply and easily installed, holding the joists in a vertical plane and assuring accurate spacing and distribution of loads by acting both in tension and compression.



Screed Clip No. 3
Used when it is desired to elevate the screeds so that concrete can be poured beneath them. A lath clip of proper size is used to hold the screed clip in place.

SPECIFICATIONS "O-T" JOISTS FLOOR AND ROOF CONSTRUCTION WITH CONCRETE SLAB

General—Where Steel Joist floor construction is specified, it shall be understood to mean Truscon "O-T" Steel Joists of the size and spacing as shown on the drawings, together with a structural concrete slab over the joists supported by metal lath firmly attached to the joists.

The Steel Joists shall be made of rolled steel shapes fabricated by high pressure electric automatic welding. The web member shall be a continuous plain round bar of constant diameter bent cold. The chords shall be Tee shaped sections, the top chord being straight and the bottom chord bent up to form the bearing. The design and details of all members shall meet the requirements of the Steel Joists Institute Specifications.

Painting—All steel joists shall be spray painted with one shop coat of good metal protective paint.

Slab Reinforcement—The top concrete slab shall be reinforced and supported by ⅜ in.* Rib Lath weighing not less than 4.0 lbs. per square yard; the lath to be placed with the ribs up and at right angles to the joists. The lath shall be attached to the top of the joists by means of lath clips spaced 12 in. apart. Where the floor finish is other than wood, the structural slab shall be reinforced with a No. 10 gauge 6x6 in. welded steel fabric.

*For joists spaced over 24 in. apart ¾ in. .58 lb. Hyrib must be used.

Bearing and Anchorage—Joists shall have a minimum bearing of 4 in. on concrete or masonry and 2½ in. on steel. Every third joist bearing on masonry walls shall be anchored. Joists parallel to walls shall have the top and bottom chords anchored at the line of the rows of bridging. Every joist bearing on structural steel beams shall be fastened by an anchor (or welding).

Bridging—As soon as joists have been erected and before the application of construction loads, joists shall be bridged, with diagonal strut type bridging fabricated from ¾ in. channels. For spans up to 14 ft. 0 in. one row of bridging is required, two rows between 14 ft. 0 in. and 21 ft. 0 in., and three rows over 21 ft. 0 in.

Ceilings—Where directly attached ceiling occurs Bottom Chord Extensions shall be provided.

Wood Floors—Where wood floors are specified, screed clips shall be secured to the joists to receive 2x1 in. screeds placed at right angles to the joists and spaced 16 in. apart. The clip shall raise the screed 1 in. above the joists.

Note: The Steel Joists Institute Specification limits the spacing of joists to 24 in. for floors, 30 in. for roofs having a poured concrete slab and 7 ft. for roofs having a steel deck or wood roof.

"O-T" STEEL JOIST LOADING TABLE

The following table gives the TOTAL safe uniformly distributed load carrying capacities of Truscon "O-T" Open Truss Steel Joists at various spacings. The weight of DEAD loads must in all cases be deducted to determine the LIVE load carrying capacities of the Joists.

TABLE No. 1

Clear Span	Joist Type	Total Safe Load Pounds	Total Safe Loads in Pounds Per Square Foot for Various Joist Spacings																
			12″	14″	16″	17″	18″	19″	20″	21″	22″	23″	24″	30″	3′-0″	3′-6″	4′-0″	5′-0″	6′-0″	7′-0″
6′-0″	81	3200	530	457	400	376	356	337	320	305	291	278	267	213	178	153	134	106	89	76
7′-0″	81	2810	402	344	301	283	268	254	241	229	219	209	202	160	134	115	101	80	67	57
8′-0″	81	2460	308	264	231	217	205	194	184	176	168	160	154	123	103	88	77	61	51	44
	82	3800	475	407	356	335	316	300	285	271	259	248	238	190	158	136	119	95	79	68
9′-0″	81	2180	243	208	182	171	162	153	145	138	132	127	121	97	81	69	61	48	40	34
	82	3800	422	362	316	298	282	266	254	242	230	220	211	169	141	121	106	84	70	60
10′-0″	81	1970	197	169	148	139	131	125	118	113	108	103	99	79	66	57	50	39	33	28
	82	3500	350	300	263	247	233	221	210	200	191	183	175	140	117	100	88	70	58	50
	102	3800	380	326	285	268	253	240	228	217	207	198	190	152	127	109	95	76	63	54
	103	3900	390	334	292	275	260	246	234	223	213	203	195	156	130	112	98	78	65	56
	104	4400	440	377	330	312	293	278	264	252	240	230	220	176	147	126	110	88	73	63
11′-0″	81	1780	162	139	121	114	108	102	97	92	89	85	81	65	54	46	41	32	.....	.....
	82	3180	289	248	217	205	193	183	174	165	158	151	145	116	97	83	73	58	48	41
	102	3800	346	297	259	244	230	218	208	197	189	180	173	138	115	99	87	69	57	49
	103	3900	355	304	266	250	236	224	213	202	194	185	178	142	118	101	89	71	59	50
	104	4400	400	343	300	283	267	253	240	228	218	208	200	160	134	114	100	80	67	57
12′-0″	81	1635	137	117	102	96	91	86	82	78	74	71	68	55	46	39	34	28	.....	.....
	82	2920	243	208	183	172	162	154	146	139	133	127	122	98	81	70	61	49	40	35
	102	3500	292	250	219	206	194	184	175	167	159	152	146	117	97	84	73	58	48	42
	103	3900	325	279	244	230	217	205	195	186	177	170	163	130	109	93	82	65	54	46
	104	4400	367	314	275	259	244	232	220	210	200	191	183	147	122	105	92	73	61	52
	123	4400	367	314	275	259	244	232	220	210	200	191	183	147	122	105	92	73	61	52
	124	4600	384	329	288	271	256	242	230	219	209	200	192	153	128	110	96	76	64	55
	125	5000	417	358	312	294	278	263	250	238	228	218	208	167	139	119	104	83	69	59
	126	5400	450	386	338	318	300	284	270	257	246	235	225	180	150	129	113	90	75	64
13′-0″	81	1510	116	100	87	82	78	73	70	66	63	61	58	46	39	33	29	.....	.....	.....
	82	2690	207	177	155	146	138	131	124	118	113	108	103	83	69	59	52	41	34	29
	102	3230	248	213	187	176	166	157	149	142	136	130	124	99	83	71	62	49	41	35
	103	3900	300	257	225	212	200	190	180	172	164	157	150	120	100	86	75	60	50	43
	104	4400	338	290	254	239	225	214	203	193	184	177	169	135	113	97	85	67	56	48
	123	4400	338	290	254	239	225	214	203	193	184	177	169	135	113	97	85	67	56	48
	124	4600	354	303	265	250	236	224	212	202	193	185	177	142	118	101	89	71	59	50
	125	5000	384	330	288	272	256	243	231	220	210	201	192	154	129	110	96	77	64	55
	126	5400	415	356	312	293	277	262	249	237	226	217	208	166	139	119	104	83	69	59
14′-0″	81	1400	100	86	75	71	67	63	60	57	55	52	50	40	34	29	.....	.....	.....	.....
	82	2500	178	153	134	126	119	113	107	102	98	93	89	71	60	51	45	35	30	.....
	102	3000	214	184	161	152	143	135	129	123	117	112	107	86	72	62	54	43	36	31
	103	3900	278	239	209	197	186	176	167	159	152	145	139	111	93	80	70	55	46	40
	104	4400	314	270	236	222	210	199	189	180	172	164	157	126	105	90	79	63	52	45
	123	4380	313	268	235	221	209	198	188	179	171	163	156	125	105	90	78	62	52	45
	124	4600	328	282	246	232	219	208	197	188	179	171	164	131	110	94	82	65	55	47
	125	5000	357	306	268	252	238	226	214	204	195	187	179	143	119	102	90	71	59	51
	126	5400	386	331	289	272	257	244	232	220	210	201	193	154	129	110	97	77	64	55
	145	5800	414	355	311	292	276	262	248	237	226	216	207	166	138	119	104	83	69	59
	146	6200	443	380	332	313	296	280	266	253	242	231	222	177	148	127	111	88	74	63
	147	6800	486	416	364	343	324	307	292	278	265	254	243	194	162	139	122	97	81	69
15′-0″	81	1310	87	75	66	62	58	55	52	50	48	46	44	35	.....	.....	.....	.....	.....	.....
	82	2330	155	133	116	110	104	98	93	89	85	81	78	62	52	44	39	31	.....	.....
	102	2810	187	161	141	132	125	118	112	107	102	98	94	75	63	54	47	38	31	.....
	103	3640	243	208	182	172	162	153	146	139	133	127	122	97	81	69	61	49	41	35
	104	4400	293	252	220	207	196	185	176	168	160	153	147	117	98	84	73	59	49	42
	123	4090	272	234	204	192	182	172	163	156	148	142	136	109	91	78	68	55	46	39
	124	4600	307	263	230	217	204	194	184	175	167	160	153	123	102	88	77	61	51	44
	125	5000	333	286	250	235	222	210	200	191	182	174	167	133	111	96	84	67	56	48
	126	5400	360	308	270	254	240	227	216	206	196	188	180	144	120	103	90	72	60	52
	145	5800	387	332	290	273	258	244	232	221	211	202	193	155	129	111	97	78	64	56
	146	6200	413	354	310	292	276	261	248	236	225	216	207	165	138	118	104	83	69	59
	147	6800	454	389	340	320	302	286	272	259	248	237	227	181	151	130	114	91	75	65

For floor construction joists should not be spaced over 24 in. o. c.

TABLE No. 1 *(Continued)*

Clear Span	Joist Type	Total Safe Load Pounds	Total Safe Loads in Pounds Per Square Foot for Various Joist Spacings																
			12″	14″	16″	17″	18″	19″	20″	21″	22″	23″	24″	30″	3′-0″	3′-6″	4′-0″	5′-0″	6′-0″	7′-0″
16′-0″	81	1230	77	66	58	54	51	49	46	44	42	40	38	31	.....	.....	.....	.....	.....	.....
	82	2190	137	117	103	97	91	86	82	78	75	71	68	55	46	39	34	.....	.....	.....
	102	2630	164	141	123	116	110	104	99	94	90	86	82	66	55	47	41	33	.....	.....
	103	3420	213	182	160	150	142	134	128	122	116	111	106	85	71	61	53	43	35	30
	104	4170	260	223	195	184	173	164	156	149	142	136	130	104	87	74	65	52	43	37
	123	3840	240	206	180	170	160	152	144	137	131	125	120	96	80	69	60	48	40	34
	124	4600	287	246	216	203	192	182	172	164	157	150	144	115	96	82	72	58	48	41
	125	5000	312	268	234	221	208	197	187	178	170	163	156	125	104	89	78	63	52	44
	126	5400	337	289	253	238	225	213	202	193	184	176	169	135	113	97	85	68	57	48
	145	5800	363	311	272	256	242	229	218	208	198	189	182	145	121	104	91	73	61	52
	146	6200	387	332	290	274	258	245	233	222	212	202	194	155	129	111	97	78	64	56
	147	6800	425	364	319	300	283	268	255	243	232	222	213	170	142	122	107	85	71	61
	166	6400	400	343	300	282	266	253	240	228	218	208	200	160	133	114	100	80	67	57
	167	7200	450	386	338	318	300	284	270	257	246	235	225	180	150	129	113	90	75	64
17′-0″	102	2470	145	125	109	103	97	92	87	83	79	76	73	58	48	42	36	29	.....	.....
	103	3220	189	162	142	134	126	120	114	108	103	99	95	76	63	54	47	38	32	.....
	104	3920	230	197	173	162	153	145	138	132	126	120	115	92	77	66	58	46	38	33
	123	3610	212	182	159	150	142	134	127	121	116	111	106	85	71	61	53	43	35	30
	124	4510	265	227	199	187	177	168	159	152	145	139	133	106	88	76	66	53	44	38
	125	5000	294	252	220	208	196	186	177	168	161	154	147	118	98	84	74	59	49	42
	126	5400	318	272	238	224	212	201	191	182	173	166	159	127	106	91	80	64	53	45
	145	5800	342	292	256	241	228	215	205	195	186	178	171	137	114	98	86	69	57	49
	146	6200	365	313	273	258	243	230	219	209	199	191	183	146	122	105	92	73	61	52
	147	6800	400	343	300	282	267	253	240	229	219	209	200	160	134	115	100	80	67	57
	166	6400	376	323	282	266	251	238	226	215	205	197	188	151	126	108	94	76	63	54
	167	7200	424	363	318	299	283	268	255	242	231	221	212	170	142	121	106	85	71	60
18′-0″	102	2330	129	111	97	92	86	82	78	74	71	68	65	52	43	37	32	.....	.....	.....
	103	3040	169	145	127	119	113	107	101	97	92	88	85	68	56	48	42	34	.....	.....
	104	3710	205	177	155	146	138	130	124	118	113	108	103	83	69	59	52	41	34	30
	123	3410	189	163	142	134	126	120	114	108	103	99	95	76	63	54	47	38	32	27
	124	4260	236	203	178	167	158	150	142	135	129	124	119	95	79	68	59	47	39	34
	125	5000	278	238	208	196	185	175	167	159	152	145	139	111	93	79	70	56	46	40
	126	5400	300	257	225	212	200	190	180	172	164	157	150	120	100	86	75	60	50	43
	145	5780	321	275	240	227	214	203	193	184	175	168	161	129	107	92	81	65	54	46
	146	6200	344	295	259	243	230	218	207	197	188	180	172	138	115	99	86	69	58	49
	147	6800	378	324	284	267	252	239	227	216	206	197	189	151	126	108	95	76	63	54
	166	6400	356	305	267	251	237	225	213	203	194	186	178	143	119	102	89	72	60	51
	167	7200	400	343	300	282	267	253	240	229	219	209	200	160	134	115	100	80	67	57
19′-0″	102	2210	116	100	87	82	78	74	70	66	63	61	58	47	39	33	29	.....	.....	.....
	103	2880	151	130	114	107	101	96	91	87	83	79	76	61	51	43	38	30	.....	.....
	104	3510	184	159	139	131	123	117	111	106	101	97	93	74	62	53	46	37	31	.....
	123	3230	170	146	128	120	113	107	102	97	93	89	85	68	57	49	42	34	28	.....
	124	4040	212	183	160	150	142	135	128	122	116	111	106	85	71	61	53	43	35	.....
	125	4990	263	225	197	186	175	166	158	150	143	137	132	105	88	75	66	53	44	38
	126	5400	284	244	214	201	190	180	171	162	155	148	142	114	95	81	71	57	47	41
	145	5480	288	247	217	204	193	183	173	165	158	151	145	115	96	83	72	58	48	41
	146	6200	326	280	245	230	218	206	196	187	178	170	163	131	109	93	82	65	55	47
	147	6800	358	307	269	253	239	226	215	205	195	187	179	143	120	102	90	72	60	51
	166	6400	337	289	253	238	225	213	202	193	184	176	168	135	112	97	84	68	56	49
	167	7200	379	325	284	268	253	239	227	217	207	198	190	152	127	108	95	76	64	54
20′-0″	102	2100	105	90	79	74	70	66	63	60	57	55	53	42	35	30	.....	.....	.....	.....
	103	2730	137	117	102	96	91	86	82	78	75	71	68	55	46	39	34	.....	.....	.....
	104	3340	167	143	125	118	111	105	100	95	91	87	84	67	56	48	42	33	.....	.....
	123	3060	153	131	115	108	102	97	92	88	84	80	77	61	51	44	38	31	.....	.....
	124	3830	192	164	144	135	128	121	115	109	104	100	96	77	64	55	48	38	32	.....
	125	4740	237	203	178	168	158	150	142	135	129	124	119	95	79	68	59	47	40	34
	126	5400	270	232	203	191	180	171	162	154	148	141	135	108	90	77	68	54	45	39
	145	5200	260	223	195	184	174	164	156	149	142	136	130	104	87	74	65	52	43	37
	146	6200	310	266	232	219	207	196	186	177	169	162	155	124	103	89	78	62	52	44
	147	6800	340	292	255	240	227	215	204	195	186	178	170	136	113	97	85	68	56	49
	166	6400	320	275	240	226	213	202	192	183	175	167	160	128	106	92	80	64	53	46
	167	7200	360	309	270	254	240	228	216	206	197	188	180	144	120	103	90	72	60	52

For floor construction joists should not be spaced over 24 in. o. c.

TABLE No. 1 *(Continued)*

Clear Span	Joist Type	Total Safe Load Pounds	Total Safe Loads in Pounds Per Square Foot for Various Joist Spacings																
			12″	14″	16″	17″	18″	19″	20″	21″	22″	23″	24″	30″	3′-0″	3′-6″	4′-0″	5′-0″	6′-0″	7′-0″
21′-0″	123	2920	139	119	104	98	93	88	83	79	76	73	70	56	46	40	35	.....	.....	.....
	124	3650	174	149	130	123	116	110	104	99	95	91	87	70	58	50	43	35	29	.....
	125	4510	215	184	161	152	143	136	129	123	117	112	107	86	72	61	54	43	36	31
	126	5400	257	220	193	182	172	162	154	147	140	134	129	103	86	73	64	52	43	37
	145	4950	236	202	177	166	157	149	142	135	129	123	118	94	79	67	59	47	39	34
	146	6200	295	253	222	209	197	187	177	169	161	154	148	118	99	84	74	59	49	42
	147	6800	324	277	243	229	216	205	194	185	177	169	162	129	108	93	81	65	54	46
	166	6400	305	261	229	215	203	193	183	174	166	159	153	122	102	87	77	61	51	44
	167	7200	343	294	257	242	229	217	206	196	187	179	172	137	115	98	86	69	58	49
22′-0″	123	2790	127	109	95	90	85	80	76	73	69	66	63	51	42	36	32	.....	.....	.....
	124	3480	158	136	119	112	105	100	95	91	86	83	79	63	53	45	40	32	.....	.....
	125	4300	196	168	147	138	130	124	117	112	107	102	98	78	65	56	49	39	32	.....
	126	5300	241	207	181	170	161	152	145	138	132	126	121	97	80	69	60	48	40	34
	145	4730	215	185	162	152	144	136	129	123	117	112	108	86	72	61	54	43	36	31
	146	6200	282	242	212	199	188	178	169	161	154	147	141	111	94	80	70	56	47	40
	147	6800	309	265	232	218	206	195	185	177	168	161	154	123	103	88	77	62	52	44
	166	6400	291	250	218	206	194	184	175	166	159	152	146	116	97	83	73	58	48	42
	167	7200	327	280	245	231	218	206	196	187	178	171	164	131	109	93	82	65	54	47
23′-0″	123	2670	116	100	87	82	77	73	70	66	63	61	58	46	39	33	29	.....	.....	.....
	124	3330	145	124	109	102	97	92	87	83	79	76	72	58	48	41	36	29	.....	.....
	125	4120	179	154	134	126	119	113	107	102	98	94	90	72	60	51	45	36	30	.....
	126	5060	221	189	165	155	147	139	132	126	120	115	110	88	74	63	55	44	37	31
	145	4520	197	169	147	139	131	124	118	112	107	103	98	79	66	56	49	39	33	28
	146	5940	258	221	194	182	172	163	155	147	141	135	129	103	86	74	65	52	43	37
	147	6800	296	254	222	209	197	187	178	169	161	154	148	118	99	84	74	59	49	42
	166	6400	278	238	209	197	186	176	167	159	152	145	139	111	93	80	70	56	46	40
	167	7200	313	268	235	221	209	198	188	179	171	163	157	125	104	90	79	62	53	45
24′-0″	123	2550	106	91	80	75	71	67	64	61	58	55	53	42	35	30	.....	.....	.....	.....
	124	3190	133	114	100	94	89	84	80	76	73	69	67	53	44	38	33	.....	.....	.....
	125	3950	164	141	124	116	110	104	99	94	90	86	82	66	55	47	41	33	.....	.....
	126	4860	202	174	152	143	135	128	121	116	110	105	101	81	68	58	51	41	34	.....
	145	4340	180	155	135	127	120	114	108	103	99	94	90	72	60	52	45	36	30	.....
	146	5690	237	203	178	168	158	150	142	135	129	124	119	95	79	68	59	47	40	34
	147	6800	283	242	212	200	189	179	170	162	155	148	142	113	94	81	71	57	47	41
	166	6400	267	228	200	188	178	168	160	152	145	139	133	107	89	76	67	53	44	38
	167	7200	300	257	225	212	200	190	180	171	164	157	150	120	100	85	75	60	50	43
25′-0″	145	4160	166	142	125	117	111	105	100	95	91	87	83	66	56	48	42	33	.....	.....
	146	5450	218	187	163	154	145	137	131	125	119	114	109	87	73	62	55	44	36	31
	147	6560	262	225	197	185	175	166	157	150	143	137	131	105	88	75	66	53	44	38
	166	6180	247	212	186	175	165	156	148	141	135	129	124	99	82	71	62	49	41	35
	167	7200	288	247	216	204	192	182	173	165	157	150	144	115	96	82	72	58	48	41
26′-0″	145	4000	154	132	115	108	102	97	92	88	84	80	77	61	51	44	38	31	.....	.....
	146	5250	202	173	152	143	135	128	121	115	110	105	101	81	67	58	51	40	34	.....
	147	6300	243	208	182	171	162	153	146	138	132	127	121	97	81	69	61	49	41	35
	166	5950	229	196	172	162	153	145	137	131	125	119	115	92	76	65	57	46	38	33
	167	7200	277	237	208	196	184	175	166	158	151	145	139	111	92	79	69	55	46	40
27′-0″	145	3850	143	122	107	101	95	90	86	82	78	75	71	57	48	41	36	29	.....	.....
	146	5050	187	160	140	132	125	118	112	107	102	98	94	75	62	53	47	37	31	.....
	147	6070	225	193	169	159	150	142	135	129	123	117	112	90	75	64	56	45	37	32
	166	5730	212	182	159	150	141	134	127	121	116	111	106	85	71	61	53	43	35	30
	167	6940	257	220	193	181	171	162	154	147	140	134	128	103	86	74	64	51	43	37
28′-0″	145	3720	133	114	100	94	89	84	80	76	72	69	66	53	44	38	33	.....	.....	.....
	146	4880	174	149	131	123	116	110	105	100	95	91	87	70	58	50	44	35	29	.....
	147	5850	209	179	157	147	139	132	125	120	114	109	105	84	70	60	52	42	35	30
	166	5520	197	169	148	139	131	124	118	113	107	103	99	79	66	56	49	39	33	28
	167	6690	239	205	179	169	159	151	143	137	130	125	119	96	80	68	60	48	40	34
29′-0″	166	5340	184	158	138	130	123	116	111	105	100	96	92	74	61	53	46	37	31	.....
	167	6460	223	191	167	157	148	141	134	127	122	116	111	89	74	64	56	45	37	32
30′-0″	166	5150	172	147	129	121	114	109	103	98	94	90	86	69	57	49	43	34	.....	.....
	167	6240	208	178	156	147	139	131	125	119	113	108	104	83	69	59	52	42	35	30
31′-0″	166	4990	161	138	121	114	107	102	97	92	88	84	81	64	54	46	40	32	.....	.....
	167	6050	195	167	146	138	130	123	117	111	106	102	98	78	65	56	49	39	32	.....
32′-0″	166	4840	151	130	113	107	101	96	91	86	82	79	76	60	50	43	38	30	.....	.....
	167	5860	183	157	137	129	122	116	110	105	100	96	92	73	61	52	46	37	31	.....

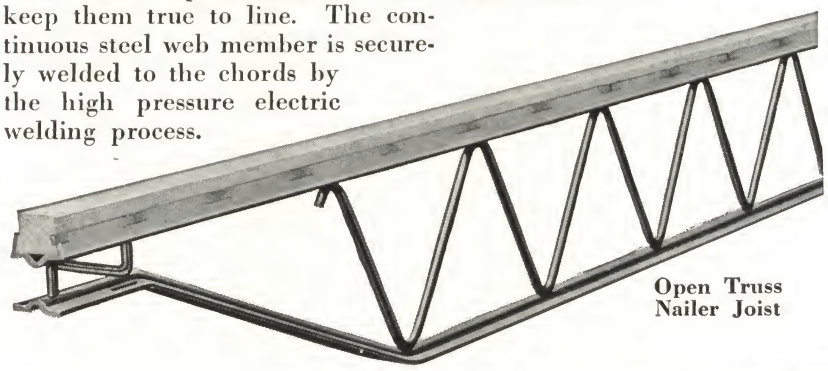
For floor construction joists should not be spaced over 24 in. o. c.

OPEN TRUSS NAILER JOISTS

TO make available for homes, apartments, stores and other light occupancy buildings the advantage of permanent construction at a cost comparable to wood has been the basic idea in the development of Nailer Joists.

In them are incorporated the basic features of Truscon "O-T" Open Truss Steel Joists, so extensively used in important buildings throughout the country. Unusual strength and rigidity result from their superior design and construction. Easy installation follows a complete and accurate fabrication in the Truscon plant.

Wide, specially formed members for top and bottom chords impart stiffness to the Nailer Joists and keep them true to line. The continuous steel web member is securely welded to the chords by the high pressure electric welding process.



Open Truss Nailer Joist

The end construction—a vital point in steel joist design—is unusually strong and rigid. Bearings for the joists are wide and ample. The underslung design at the supports not only insures stability of the joists during installation but provides additional head room under the supporting girders.

Their open web permits the passage of pipes and conduits in any direction through the floor construction without requiring the cutting of joists or a suspended ceiling. Steel Joists eliminate the settlement due to shrinkage and consequent separation of baseboard and floor, and its tendency to cause plaster cracking.

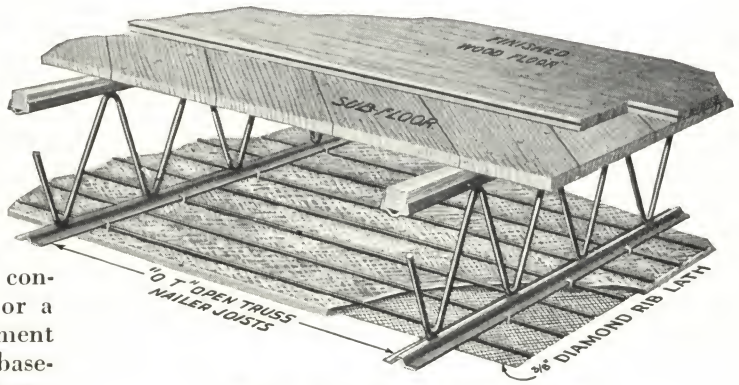
ADVANTAGES

Truscon Nailer Joists reach the job ready for placing without cutting or fitting. The wood flooring is nailed directly to the wood nailing strips which are securely attached to the top chords of the joists.

The light weight of nailer joist construction lessens the time and labor required for erection and also saves materials in the supporting framework and foundations. Every detail of joists and attachments has been perfected by practical experience to simplify installation and assure dependable results.

With a metal lath plastered ceiling attached to the lower chord of the joists, the construction provides fire-safety to a substantial degree, preventing the spread of fire from below. Several floors can be installed at one time.

With Truscon Nailer Joists available it is no longer necessary from either a practical or economical standpoint to use wood joist construction in any building.



Nailer Joist Construction Details

SPECIFICATIONS "O-T" NAILER JOISTS

General—Where Nailer Joist floor construction is specified, it is understood to mean Truscon "O-T" Nailer Joists of the size and spacing as shown on the drawings, together with a wooden floor over the joists and, unless otherwise specified, a metal lath and plaster ceiling directly beneath the joists.

The Nailer Joists shall be made of rolled steel shapes fabricated by high pressure electric automatic welding. The web member shall be a continuous plain round bar of constant diameter bent cold. The top chord shall be straight and the bottom chord bent up to form the bearing. The design and details of all members shall meet the requirements of the Steel Joist Institute Specifications. The wood nailer strip shall not be considered in determining the carrying capacity of the joist.

Nailer Strip—The wood nailer strip shall be treated with a moisture proofing solution to prevent its absorption of moisture. It shall be held securely on top of the top chord by pressure imbedment of the flanges of the top chord into its sides.

Painting—All Nailer Joists shall be spray painted with one shop coat of good metal protective paint.

Bearing and Anchorage—Joists shall have a minimum bearing of 4 in. on concrete or masonry and 2½ in. on steel. Every third joist bearing on masonry walls shall be anchored. Joists parallel to walls shall have the top and bottom chords anchored at the line of the rows of bridging. Every joist bearing on structural steel beams shall be fastened by an anchor (or welding).

Bridging—As soon as joists have been erected and before the application of construction loads, joists shall be bridged, with diagonal strut type bridging fabricated from ¾ in. channels. For spans up to 14 ft. 0 in. one row of bridging is required; two rows between 14 ft. 0 in. and 21 ft. 0 in.; and three rows over 21 ft. 0 in.

Ceilings—Where directly attached ceiling occurs, Bottom Chord Extensions shall be provided.

Note: The spacing of the Nailer Joists must not be more than the safe span of the flooring over the joists.

"O-T" NAILER JOIST LOADING TABLE

The following table gives the TOTAL safe uniformly distributed load carrying capacities of Truscon "O-T" Open Truss Nailer Joists at various spacings. The weight of DEAD loads must in all cases be deducted to determine the LIVE load carrying capacities of the joists.

TABLE 2

Clear span	Joist type	Total safe load pounds	Total safe load in pounds per square foot for various joist spacings																
			12″	14″	16″	17″	18″	19″	20″	21″	22″	23″	24″	30″	3′-0″	3′-6″	4′-0″	5′-0″	6′-0″	7′-0″
8′-0″	80W	3100	388	332	291	274	258	245	233	221	211	202	194	155	129	111	97	78	65	55
9′-0″	80W	3100	344	295	258	243	230	218	207	197	188	180	172	138	115	98	86	69	57	49
10′-0″	80W	3100	310	266	233	219	207	196	186	177	169	162	155	124	103	89	78	62	52	44
11′-0″	80W	2818	256	220	192	181	171	162	154	146	140	134	128	102	85	73	64	51	43	37
12′-0″	80W	2583	215	185	161	152	144	136	129	123	117	112	108	86	72	62	54	43	36	31
	100W	3111	259	222	194	183	173	164	156	148	141	135	130	104	86	74	65	52	43	37
	120W	4000	333	286	250	235	222	211	200	190	182	174	167	133	111	95	83	67	56	48
13′-0″	80W	2385	183	158	138	130	122	116	110	105	100	96	92	73	61	52	46	37	31	
	100W	2872	221	190	166	156	147	140	133	126	121	115	110	88	74	63	55	44	37	32
	120W	3744	288	247	216	203	192	182	173	165	157	150	144	115	96	82	72	58	48	41
14′-0″	80W	2214	158	136	119	112	105	100	95	90	86	83	79	63	53	45	40	32		
	100W	2667	190	163	143	135	127	120	114	109	104	99	95	76	64	54	48	38	32	
	120W	3476	248	213	186	175	166	157	149	142	135	130	124	99	83	71	62	50	41	35
	121W	4600	329	282	246	232	219	208	197	188	179	171	164	131	110	94	82	66	55	47
15′-0″	80W	2067	138	118	103	97	92	87	83	79	75	72	69	55	46	39	34			
	100W	2489	166	143	124	117	111	105	100	95	91	87	83	66	55	47	42	33		
	120W	3244	216	185	162	153	144	137	130	124	118	113	108	87	72	62	54	43	36	31
	121W	4600	307	263	230	216	204	194	184	175	167	160	153	123	102	88	77	61	51	44
16′-0″	80W	1938	121	104	91	85	81	76	73	69	66	63	61	48	40	35	31			
	100W	2333	146	125	109	103	97	92	87	83	80	76	73	58	49	42	37			
	120W	3042	190	163	143	134	127	120	114	109	104	99	95	76	63	55	48	38	32	
	121W	4600	288	246	216	203	192	182	173	164	157	150	144	115	96	82	72	58	48	41
17′-0″	100W	2196	129	111	97	91	86	81	77	74	71	68	65	52	43	37	32			
	120W	2863	168	144	126	119	112	106	101	96	92	88	84	67	56	48	42	34		
	121W	4600	271	232	203	191	180	171	163	155	148	141	135	108	90	77	68	54	45	39
	141W	4600	271	232	203	191	180	171	163	155	148	141	135	108	90	77	68	54	45	39
18′-0″	100W	2074	115	99	86	81	77	73	69	66	63	60	58	46	38	33				
	120W	2704	150	129	113	106	100	95	90	86	82	78	75	60	50	43	38	30		
	121W	4444	247	212	185	174	165	156	148	141	135	129	124	99	82	71	62	49	41	35
	141W	4600	296	220	192	180	171	162	154	146	139	133	128	102	85	73	64	51	43	37
	161W	5481	305	261	228	215	203	192	183	174	166	159	152	122	102	87	76	61	51	44
19′-0″	100W	1965	103	89	78	73	69	65	62	59	56	54	52	41	34	30				
	120W	2561	135	116	101	95	90	85	81	77	74	70	67	54	45	39	34			
	121W	4211	222	191	166	156	148	140	133	127	121	116	111	89	74	64	56	44	37	32
	141W	4600	242	208	182	171	161	153	145	138	132	126	121	97	81	69	61	48	40	35
	161W	5193	273	234	205	193	182	173	164	156	149	143	137	109	91	78	68	55	46	39
20′-0″	100W	1867	93	80	70	66	62	59	56	53	51	49	47	37	31					
	120W	2433	122	105	91	86	81	77	73	70	67	64	61	49	41	35	30			
	121W	4000	200	171	150	141	133	126	120	114	109	104	100	80	67	57	50	40	33	
	141W	4567	228	196	171	161	152	144	137	130	124	119	114	91	76	65	57	46	38	33
	161W	4933	247	212	185	174	165	156	148	141	135	129	123	99	82	70	62	49	41	35
21′-0″	120W	2317	110	94	83	78	73	69	66	63	60	57	55	44	37	32				
	121W	3810	181	156	136	128	121	114	109	104	99	95	91	72	60	52	45	36	30	
	141W	4349	207	177	155	146	138	131	124	118	113	108	104	83	69	59	52	41	35	30
	161W	4698	224	192	168	158	149	141	134	128	122	117	112	90	75	64	56	45	37	32
22′-0″	120W	2212	101	86	75	71	67	64	60	57	55	52	50	40	34					
	121W	3636	165	142	124	117	110	104	99	94	90	86	83	66	55	47	41	33		
	141W	4152	189	162	142	133	126	119	113	108	103	99	94	76	63	54	47	38	32	
	161W	4485	204	175	153	144	136	129	122	117	111	106	102	82	68	58	51	41	34	
23′-0″	120W	2116	92	79	69	65	61	58	55	53	50	48	46	38	31					
	121W	3478	151	130	113	107	101	96	91	86	82	79	76	60	50	43	38	30		
	141W	3971	173	148	130	122	115	109	104	99	94	90	86	69	58	49	43	35		
	161W	4290	187	160	140	132	124	118	112	107	102	97	93	75	62	53	47	37	31	
24′-0″	120W	2028	85	72	63	60	56	53	51	48	46	44	42	34						
	121W	3333	139	119	104	98	93	88	83	79	76	73	70	56	46	40	35			
	141W	3806	159	136	119	112	106	100	95	91	87	83	79	63	53	45	40	32		
	161W	4111	171	147	128	121	114	108	103	98	93	89	86	69	57	49	43	34		
25′-0″	141W	3653	146	125	110	103	97	92	88	84	80	76	73	58	49	42	37			
	161W	3947	158	136	119	112	105	100	95	90	86	83	79	63	53	45	39	32		
26′-0″	141W	3513	135	116	101	95	90	85	81	77	74	71	68	54	45	39	34			
	161W	3795	146	125	110	103	97	92	88	83	80	76	73	58	49	42	37			
27′-0″	141W	3383	125	107	94	88	83	79	75	71	68	65	63	50	42	36	31			
	161W	3654	135	116	102	96	90	85	81	77	74	71	68	54	45	39	34			
28′-0″	141W	3262	117	100	88	82	78	74	70	67	64	61	58	47	39	33				
	161W	3524	126	108	95	89	84	80	76	72	69	66	63	50	42	36	32			
29′-0″	161W	3402	117	100	88	83	78	74	70	67	64	61	59	47	39	34				
30′-0″	161W	3289	110	94	83	77	73	70	66	63	60	57	55	44	37	32				
31′-0″	161W	3183	103	88	77	72	69	65	62	59	56	54	51	41	34	30				
32′-0″	161W	3083	96	82	72	68	64	61	58	55	53	50	48	39	32					

For floor construction joists should not be spaced over 24 in. o. c.

"CLERESPAN" JOISTS

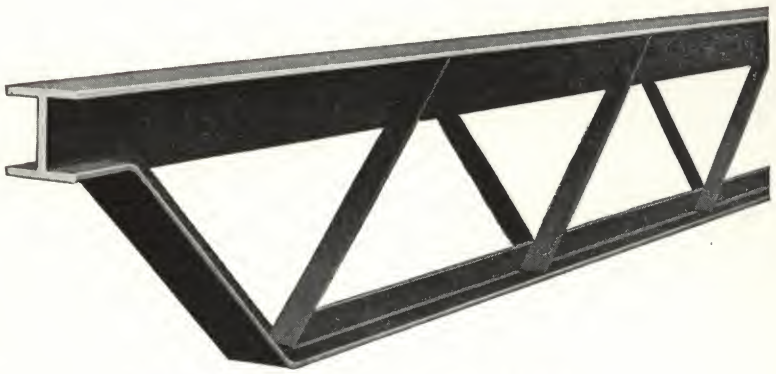
Truscon "Clerespan" Joists when employed in floor construction can be used advantageously in buildings for all types of occupancy regardless of their location. In many types of buildings their use will automatically eliminate all columns from the structure with the exception of those in the outer walls. Greater floor areas are thus provided without obstructing columns than has ever heretofore been accomplished. When used in roof construction, "Clerespan" Joists meet every requirement of every type of building.

"Clerespan" Joists made of hot rolled structural tees, are designed in accordance with standard engineering practice. Top chords are designed for bending between panel points as well as direct compression.

"Clerespan" Joists all have a camber built in them. They are fabricated by welding in a modern shop noted for its welding equipment and developments in automatic welding.

"Clerespan" Joists possess unusual lateral stiffness. This is due to the high radius of gyration about the vertical axis.

"Clerespan" accessories as anchors, lath clips, screed clips, bearing plates, etc., are similar to those used with open truss joists. Diagonal bracing or bridging is provided by hot rolled angles. Lines of bracing are about 10 ft. 0 in. apart.



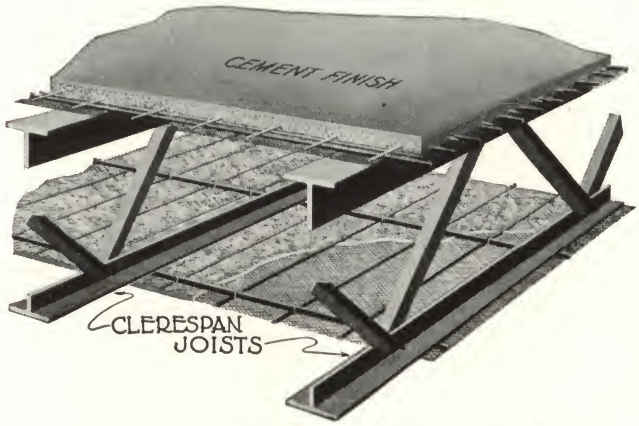
"CLERESPAN" JOIST LOADING TABLE

The following table gives the TOTAL safe UNIFORMLY distributed load carrying capacities of Truscon "Clerespan" Joists. The weight of DEAD loads must in all cases be deducted to determine the LIVE load carrying capacities. CARRYING CAPACITIES MUST BE REDUCED FOR CONCENTRATED LOADS.

TABLE 3

"Clerespan" Joist Type		CLEAR OPENING OR NET SPAN											
		29-0	30-0	31-0	32-0	33-0	34-0	35-0	36-0	37-0	38-0	39-0	40-0
20" Depths	201	250	238	226	215	203	192	182	172	163	155	148	141
	202	276	262	249	236	222	210	197	187	177	167	159	151
	203	311	296	282	270	254	240	226	214	202	192	182	173
	204	372	353	335	315	297	280	265	251	238	226	215	205
	205	404	385	367	350	330	312	294	278	262	248	236	224
	206	489	464	439	412	387	365	344	325	308	292	277	264
	207	.....	504	479	456	433	409	387	366	347	330	314	299
	208	.....	.....	.....	499	471	444	420	398	377	358	340	324
	209	.....	.....	.....	.....	.....	501	474	449	426	404	385	366
	2010	.....	.....	.....	.....	.....	.....	514	487	462	438	416	395
	2011	.....	.....	.....	.....	.....	.....	.....	.....	502	475	451	429
	2012	.....	.....	.....	.....	.....	.....	.....	.....	.....	520	493	469
	2013	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	514	489
	2014	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	533
		37-0	38-0	39-0	40-0	41-0	42-0	43-0	44-0	45-0	46-0	47-0	48-0
24" Depths	242	200	192	185	178	171	165	159	152	145	139	133	127
	243	227	219	211	203	196	189	183	174	166	160	153	146
	244	274	263	252	242	232	222	212	203	194	186	179	172
	245	319	303	288	274	261	248	238	227	216	208	198	190
	246	351	339	325	314	303	290	277	264	253	242	232	222
	247	390	374	360	346	333	321	309	296	283	271	260	250
	248	450	427	407	387	369	353	337	322	309	296	284	272
	249	479	460	442	426	409	394	379	363	347	333	320	307
	2410	.....	523	498	475	453	432	413	395	378	363	348	334
	2411	.....	.....	.....	.....	494	471	450	431	412	395	378	362
	2412	.....	.....	.....	.....	.....	513	490	469	449	430	413	396
	2413	.....	.....	.....	.....	.....	.....	.....	492	470	450	431	413
	2414	.....	.....	.....	.....	.....	.....	.....	.....	.....	491	470	451
		45-0	46-0	47-0	48-0	49-0	50-0	51-0	52-0	53-0	54-0	55-0	56-0
28" Depths	284	218	211	205	198	193	186	181	176	171	166	161	155
	285	253	243	233	224	215	207	199	192	184	177	171	165
	286	270	262	254	247	240	233	226	219	213	206	199	192
	287	304	294	285	276	268	259	252	244	237	230	222	215
	288	353	341	328	316	303	292	281	271	261	252	243	235
	289	372	359	346	332	319	306	295	283	272	263	253	244
	2810	410	397	383	370	356	341	328	316	304	292	282	272
	2811	460	444	430	416	403	390	376	362	349	337	325	314
	2812	497	481	465	450	436	422	409	394	379	366	353	341
	2813	.....	.....	.....	488	468	449	432	416	400	385	371	358
	2814	.....	.....	.....	.....	.....	489	470	452	436	420	404	390
		53-0	54-0	55-0	56-0	57-0	58-0	59-0	6-0	61-0	62-0	63-0	64-0
32" Depths	328	288	280	272	265	257	249	241	233	226	219	212	206
	3210	332	323	314	306	296	289	281	273	264	256	248	240
	3211	371	362	351	342	332	324	315	308	300	292	284	275
	3212	405	394	383	373	363	353	344	335	326	318	308	299
	3213	450	437	425	413	398	385	372	360	348	337	326	316
	3214	480	467	454	442	430	418	405	391	379	366	355	344

For Roofs Only



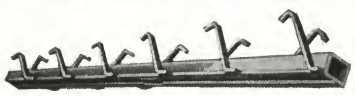
"Clerespan" Joists with Finished Floor of Cement 3/8 In. Diamond Rib Lath for Floor and Ceiling

"Clerespan" Joists with Ferrobord Steeldeck Roof

PRESSED STEEL INSERTS

SLOTTED INSERTS

Truscon Slotted Inserts are attached to the forms and are completely embedded in the concrete construction. Only the narrow slot flush with the concrete is seen in the completed work. The bolt can be moved along this slot to any location, allowing wide variation in position. Truscon Slotted Inserts are used with equal success in ceilings, slabs, beams or columns. The anchors are integral with the insert and occur every 6 in. on each side.

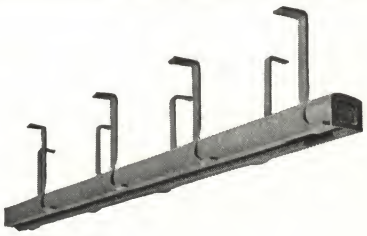


Standard lengths 12, 18, 24, 36, 48 and 60 in. Any desired length or run is obtained by removing end caps and butting the open ends together.

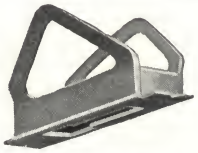
BRICK INSERTS

Truscon Brick Slotted Inserts have all the qualities and properties of Truscon Concrete Slotted Inserts.

The prongs are so bent that they provide positive anchorage of the insert to the masonry. They are furnished in standard lengths of 12, 18, 24, 36, 48 and 60 in.



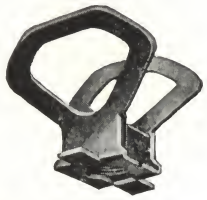
ADJUSTABLE INSERTS



Truscon Adjustable Inserts are made of pressed steel and have the same simple method of application to concrete and adjustment for bolts as the slotted inserts, but without their wide range of adjustability. Made to carry ½, ⅝, and ¾ in. bolts.

TAPPED INSERTS

Truscon Tapped Inserts are made from pressed steel of highest quality, and furnished tapped for ⅜, ½, ⅝ and ¾ in. bolts. Particularly adapted for work where arrangement has been determined before start of construction. Where required, this type of insert can be furnished tapped for ⅜ or ½ in. pipe.



CARRYING CAPACITIES

Since the supporting capacity of inserts is largely dependent on the strength of the concrete and the bolts, we cannot guarantee any particular loading. The following working loads have been determined by tests and give a factor of safety of at least four.

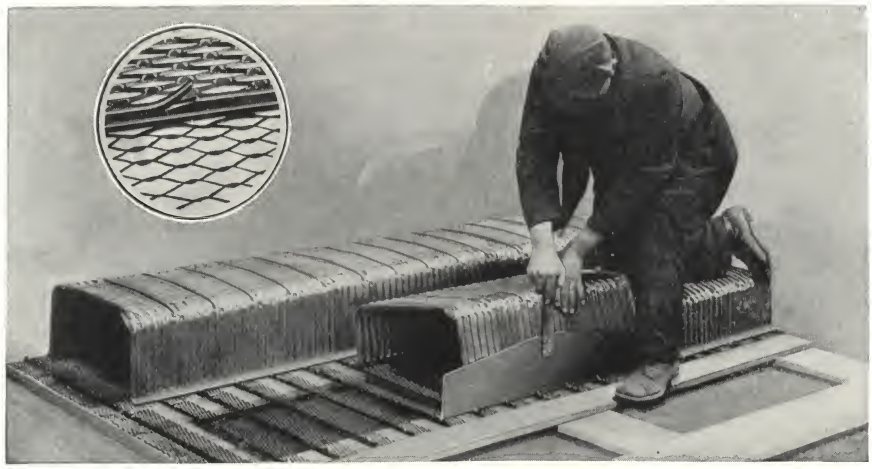
Inserts	For 2000 lb. concrete
Slotted Inserts	2000 lbs. per lin. ft.
Adjustable Inserts	
½ in.	800 lbs. per insert
⅝ and ¾ in.	1400 lbs. per insert
Tapped Inserts	
All Sizes	1500 lbs. per insert

FLORETYLE CONSTRUCTION—PERMANENT STEEL TILE

Truscon Floretyle are of two types—Ribbed Tile and Corrugated Tile. Both types are die formed in powerful presses, which insures uniformity of cross section. Ribbed tile in addition to having corrugated sides, have deep stiffening ribs across the top every 5 in. This gives the tile exceptional stiffness.

Properties of Floretyle

	Ribbed Tile
Standard Depths	4, 6, 8, 10, 12 and 14 in.
Standard Width at base	20 in.
Special Widths	10 and 15 in.
Standard Length will lay	2 ft. 2 in.
Half Length will lay	1 ft. 1 in.
Tapered Tile Length	2 ft. 2 in.
Width of Tapered Tile Narrow End	Nominally 16″ but can be furnished any width or depth required
	Corrugated Tile
Standard Depths	4, 6, 8, 10, 12, 14 and 16 in.
Standard Width at base	20 in.
Special Widths	12 and 16 in.
Standard Length will lay	2 ft. 10 in.
Half Length will lay	1 ft. 4 in.
Tapered Tile Length	2 ft. 10 in.
Width of Tapered Tile Narrow End	16 in.



LOCKTYLE LATH

Locktyle lath is a ⅜ Diamond Ribbed Lath furnished by special fabrication in rolls 100 ft. 0 in. long and 24 in. wide. The lath is furnished in weights of 3.4 lbs. and 4.0 lbs. per sq. yd. in either black or copper bearing steel. The ribs of the lath are pronged to engage the flange of the floretyle.

Advantages of Permanent Tile

Saves in concrete due to stiffness of the pan.

Saves in placing costs, less weight per unit and removing of tile after pouring of concrete is eliminated.

Simplifies form work.

Saves in placing pipes and conduits.

Locktyle construction is easily and speedily erected. The lath is rolled out on the forms, tacked in place, and the tile slipped into place by means of a special tool. The pressure of the wet concrete on the tile produces tension in the lath, resulting in a drum-like surface for a plaster base.

Advantages of Locktyle Lath

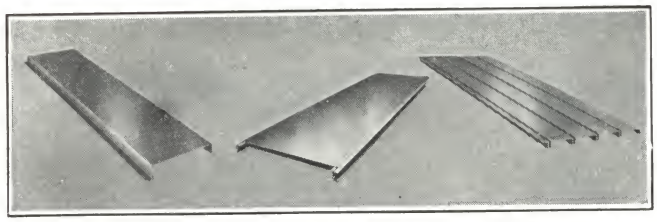
Insures uniform width of joists and positive attachment of ceiling to the structural slab.

Saves in placing ceiling lath.

Saves in plastering due to the rigid lath and drum-like surface provided.

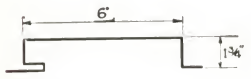
STEELDECK ROOFS

STEELDECK Roofs, insulated to any degree and waterproofed, are of a broad and general usefulness. They are particularly adaptable to theatres, gymnasiums, schools, auditoriums, public halls and industrial buildings requiring large floor areas free from supports and obstructions. Steeldecks are plates of copper-bearing steel of standardized lengths and widths, with ribs formed longitudinally in the plates. The ribs are on the underside of the plates and the top is a smooth level surface to receive insulation and waterproofing. They can be used to advantage on straightway, flat, pitched and curved roofs with a minimum radius of 40 ft.



Ferrobord Ferrodeck Ferroplate

FERROBORD



This roofdeck, 6 in. wide, is so formed that each sheet firmly interlocks with the adjoining sheet to form a continuous deck over the entire roof.

Ferrobord 6 in. wide is used for spans between 6 and 10 ft. Made in 20 and 18 gauge with ribs either 1¼ or 1¾ in. deep depending upon the load.

Any length may be supplied and butt joints may occur between supports by using butt clips.

Welding Ferrobord—This deck is especially adaptable for the arc welding process of erection because the flat, bottom flange of the rib presents an extremely easy and simple welding condition. The operation is done from above, with each weld readily accessible.

FERROBORD SECTIONS FOR DIFFERENT SPANS AND ROOF LOADINGS

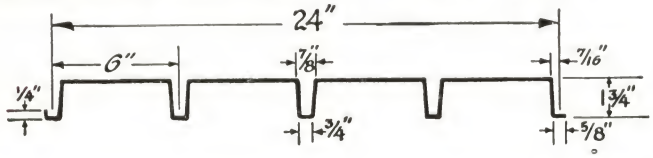
Type of Ferrobord	Span in feet	Total dead load and live load per square foot											
		25 lbs.		30 lbs.		35 lbs.		40 lbs.		45 lbs.		50 lbs.	
		Gauge	Depth	Gauge	Depth	Gauge	Depth	Gauge	Depth	Gauge	Depth	Gauge	Depth
6" wide	6' 0"	20	1¼"	20	1¼"	20	1¼"	20	1¼"	20	1¼"	20	1¼"
6" wide	6' 6"	20	1¼"	20	1¼"	20	1¼"	20	1¼"	20	1¾"	20	1¾"
6" wide	7' 0"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	20	1¾"
6" wide	7' 6"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	18	1¾"
6" wide	8' 0"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	18	1¾"
6" wide	8' 6"	20	1¾"	20	1¾"	20	1¾"	18	1¾"	18	1¾"		
6" wide	9' 0"	20	1¾"	20	1¾"	18	1¾"	18	1¾"				
6" wide	9' 6"	20	1¾"	18	1¾"								
6" wide	10' 0"	18	1¾"										

The above table has been computed on the following assumptions:
Maximum unit fiber stress 18,000 pounds per sq. inch.
Maximum allowable deflection is one two-hundred and fiftieth ($\frac{1}{250}$) of the span in inches based on either a uniform or an equal concentrated load.

Dead load of Truscon Ferrocoustic with insulation, built-up roofing and acoustical panels approximately five (5) to nine (9) pounds per sq. foot, according to the type of material used.

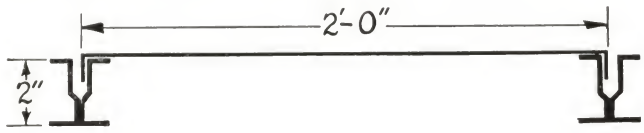
FERROPLATE

18, 20, 22 or 24 gauge copper-bearing sheets or galvanized sheets (before fabrication) 24 in. wide; ribs 1¼ in. and 1¾ in. deep; maximum length, under 12 ft. Welded to purlins.



FERRODECK

An assembly of sub-purlins and reinforced roof sheets. Sub-purlins, 2 in. deep, 18 gauge. Roof sheets, 2x4 ft., 18 or 20 gauge; substantially reinforced with angles every 16 in. on center.



FERROCOUSTIC

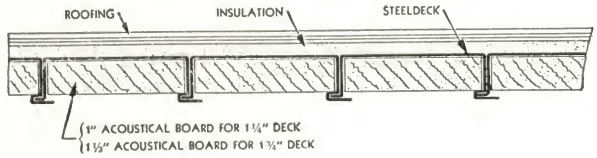
Ferrocoustic Roofdecks provide all the advantages of Steeldeck with the additional feature of acoustical correction for auditoriums, large rooms, gymnasiums and similar places.

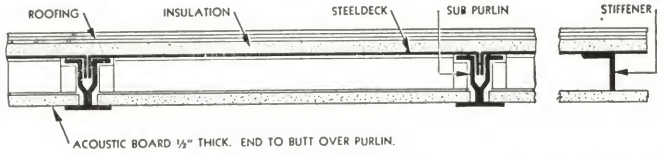
FERROBORD, 6 in. wide, with acoustical treatment, consists of panels of any commercial acoustical board fitted between the ribs of these roofdecks. The flanges of the ribs form a positive mechanical support. These ribs are either 1¼ or 1¾ in. deep, allowing either 1 or 1½ in. of acoustical treatment to be used. Sheets with acoustical board inserted are welded to purlins, eliminating metal clips and adding strength to the construction.

The Ferrobord construction with the Ferrocoustic treatment also makes an excellent, light-weight, quiet floor construction of minimum thickness when surfaced with cement, magnesite, rubber tile, linoleum or other materials, for its structural design enables it to carry unusually heavy loads.

FERRODECK with acoustic board applied makes also an excellent installation. The sub-purlins are secured to the supporting roof framing with clips or by the welding process.

The acoustic board, which is ½ in. thick, is laid on the bottom flanges of the sub-purlins, then the fabricated roof sheets are placed so that the flanged-over edges of adjacent sheets fit side by side into the openings along the tops of the sub-purlins. The acoustical board automatically is held firmly in place by the stiffening angles in the roof sheets.





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BALTIMORE, MD., 330 W. 24TH STREET
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HARRISBURG, PA., 600 NO. SECOND STREET
HOUSTON, TEXAS, 731 A. M. & M. BUILDING
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MILWAUKEE, WIS., 6111 PLANKINGTON BUILDING
MINNEAPOLIS, MINN., 738 BAKER BUILDING
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NEW ORLEANS, LA., 1143 CANAL BANK BUILDING
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SAN FRANCISCO, CALIF., 604 MISSION STREET
SCRANTON, PA., 203 COLFAX AVENUE
SYRACUSE, N. Y., 642 GURNEY BUILDING
TOLEDO, OHIO, 314 COMMERCE GUARDIAN BANK BUILDING
WASHINGTON, D. C., 700 INVESTMENT BUILDING

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ST. LOUIS, MO.
ST. PAUL, MINN.
YOUNGSTOWN, OHIO

WINDOWS··METAL AND WOOD
– SECTION – 11

CATALOGS *13 to 19*

WOOD

ASSOCIATED MANUFACTURERS OF "BILT-WELL" MILLWORK

ADAMS & KELLY CO., Omaha, Neb.
ADAMS-ROGERS CO., Indianapolis, Ind.
CARR-CULLEN CO., Minneapolis, Minn.
CARR & JOHNSTON CO., Peoria, Illinois
CARR-TROMBLEY MFG. CO., St. Louis, Mo.
CARR & MOEHL CO., Des Moines, Iowa
COLLIER-ADAMS MFG. CO., St. Joseph, Mo.
THE COLLIER-BARNETT CO., Toledo, Ohio
CARR, RYDER & ADAMS COMPANY, Dubuque, Iowa

BILT WELL MILL WORK REGISTERED

producers of millwork in the world, and thus provide complete facilities for the design, engineering, production, and sale of fine quality millwork.

Products (Wood)

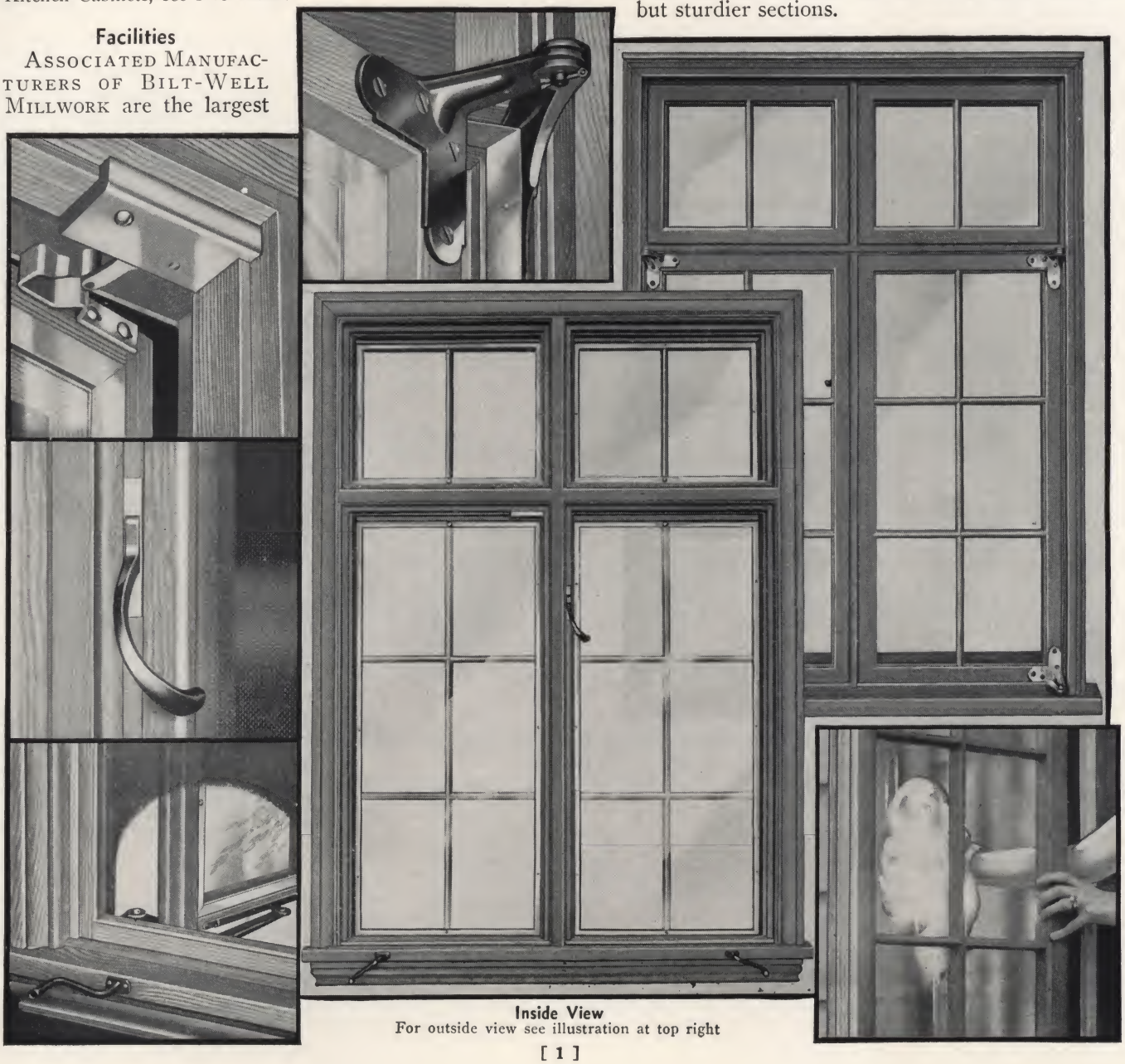
Cabinets—Broom, Buffet, Ironing Board, Kitchen, Linen, Medicine, Telephone, Utility. **Cabinetwork** *(Special)*—Casework Panelwork, Mantels. **Columns**—Interior, Exterior *(lock-joint construction)*. **Doors—Softwoods**—Exterior, Interior, Garage, Cupboard, Special. Hardwood (Veneered—all woods) Flush, Paneled. **Frames**—Casement, Window, Tracery, Interior and Exterior Door. **Mouldings**—Exterior and Interior. **Sash**—Casement, Window, Cellar, Garage, Storm, and Church. **Stairwork**—Complete, or Newels, Rail, Balusters, or Stair Panelwork. **Screens**—Window, Sash (Pine, Hardwood), Door, Porch. **Glass**—Sheet, Plate, Mirrors. For our pages on Kitchen Cabinets, see File Index.

Bilt-Well "Clos-tite" Wood Casements

Embodying new and superior features such as: better weathering because of triple contact of sash on frame and spring bronze weatherstripping, new economy through complete factory assembling, rapid and simplified installation, new architectural beauty by narrower but sturdier sections.

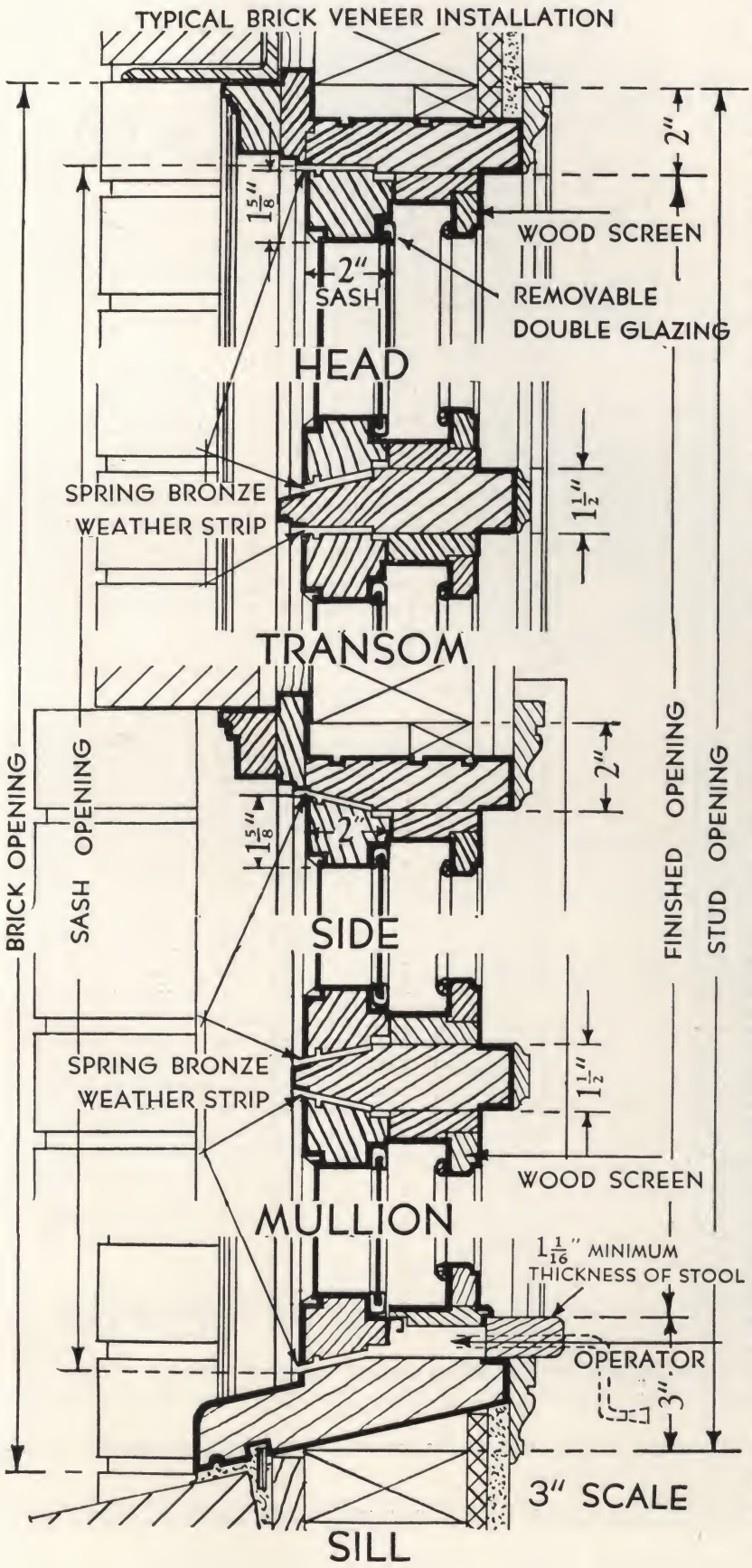
Facilities

ASSOCIATED MANUFACTURERS OF BILT-WELL MILLWORK are the largest



Inside View
For outside view see illustration at top right

BILT-WELL "CLOS-TITE" WOOD CASEMENTS



High Grade Material—Clear Western Pine, thoroughly seasoned. Bars are wood except on circle transoms, which are zinc. Sash are glazed with quality labeled glass.

Good Workmanship—Surfaces are smoothly finished, joints are sturdily constructed and produced by *master craftsmen* with *special automatic machines.*

A Complete Unit—Includes double glazed sash, weatherstripped frame, wired screen, and latest type "Windor" hardware. The hardware is fitted and applied, before shipment.

Superior Construction Features—Designed on the principle of the refrigerator door, the tapered edges of the sash form contact with those of the frame on an angle to insure a perfect seal. Spring (phosphor) bronze weatherstripping installed all around the sash is additional protection against air-leakage.

Transom section illustrates the overhanging water-drip, which prevents the entrance of rain. The degree of "pitch" on the sill insures proper drainage, and the weatherstripping provides protection against infiltration of air, soot, and dust.

Standardized for installation in wood stud, brick veneer, stucco, and solid masonry walls. Details for various types of construction furnished to architects upon request.

Insect Screens—Consist of a wooden frame to match the interior trim, with 16-mesh solid copper bronze or galvanized wire.

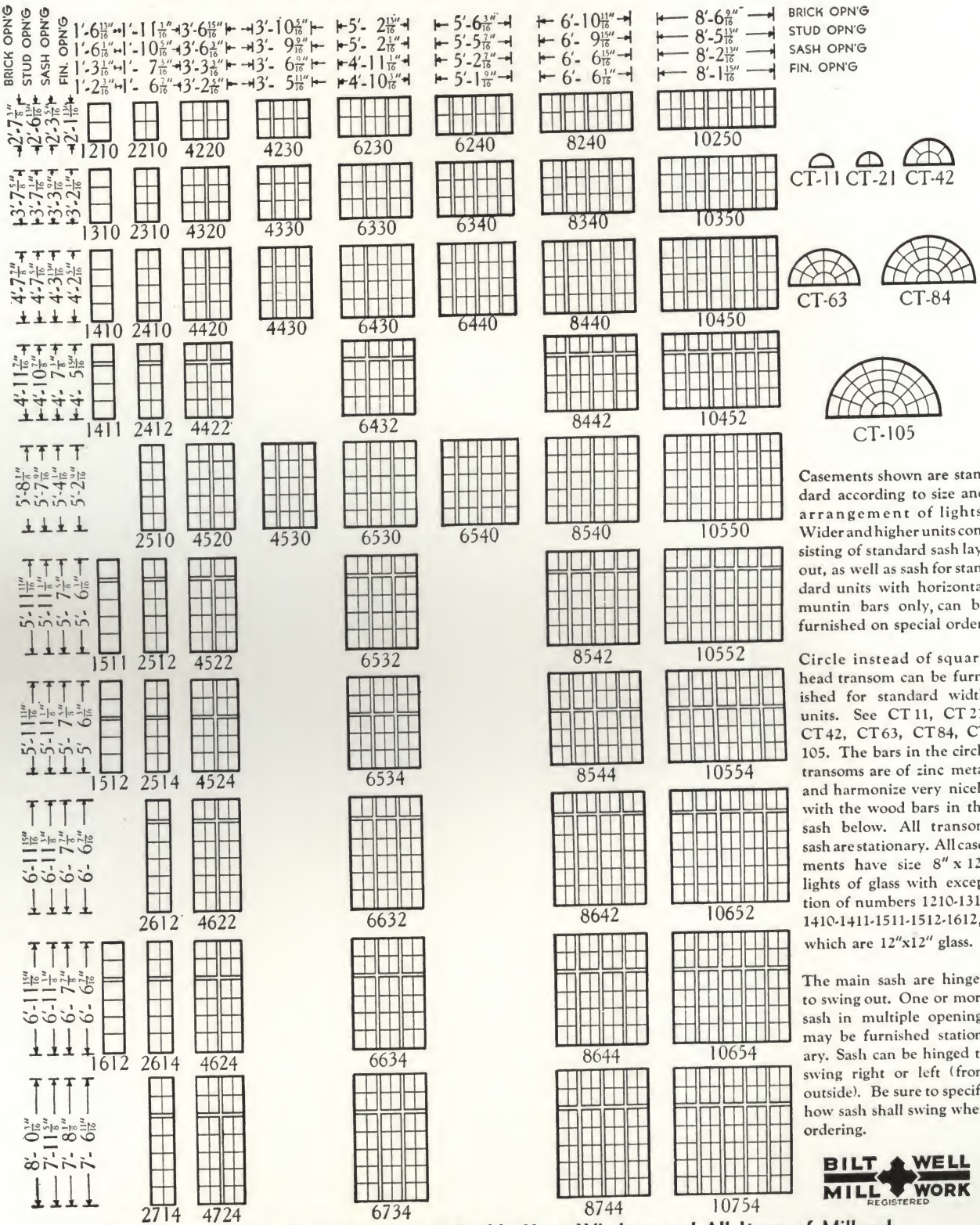
Removable Double Glazing—Equipped with two panes of glass, separated by a dead air space, thus meeting the requirements of air conditioning. Auxiliary glass is framed in zinc and fits flush on the inside of the sash attached with screws set in bronze bushings. Between the auxiliary glass and the sash, a gasket of waterproof and dustproof material is installed to insure a tight joint.

Hardware of Proven Quality—*(See opposite page for illustrations referred to here)*—Extension *corner* hinges are installed on all swinging sash (see illustration No. 1). They are special in design and are constructed to reinforce the hinged side of the sash. They facilitate cleaning the outside glass from inside of room (see illustration No. 5). These hinges are of die-cut steel, cadmium plated and equipped with brass bushings. A center (*or third*) companion hinge can be furnished on long sash. We offer the choice of "Windor" Series 800 locking handle (see illustration No. 2) or "Windor" Series 45 top closer (see illustration No. 3). On sash of more than four lights high, both locking handle and top closer are recommended and furnished, if specified, at a small additional charge. "Windor" Series 45 top closing device is set at the top over the sash and is so designed to receive the sash within 2 in. of the frame, thence drawing the sash into closed position. "Windor" Series 800 locking handle, when furnished, also draws the sash into positive contact with the frame.

"Windor" Series 26 operator (see illustration No. 4) is installed under the stool, entirely concealing the equipment. When the sash is closed, the operator makes it definitely impossible to open sash from the outside without breaking the glass.

"Windor" hardware carries a five-year warranty and is manufactured by The Casement Hardware Co. of Chicago.

BILT-WELL "CLOS-TITE" WOOD CASEMENTS



Casements shown are standard according to size and arrangement of lights. Wider and higher units consisting of standard sash layout, as well as sash for standard units with horizontal muntin bars only, can be furnished on special order.

Circle instead of square head transom can be furnished for standard width units. See CT 11, CT 21, CT 42, CT 63, CT 84, CT 105. The bars in the circle transoms are of zinc metal and harmonize very nicely with the wood bars in the sash below. All transom sash are stationary. All casements have size 8" x 12" lights of glass with exception of numbers 1210-1310 1410-1411-1511-1512-1612, which are 12"x12" glass.

The main sash are hinged to swing out. One or more sash in multiple openings may be furnished stationary. Sash can be hinged to swing right or left (from outside). Be sure to specify how sash shall swing when ordering.

BILT WELL MILL WORK REGISTERED

Manufacturers of a Complete Line of Double Hung Windows and All Items of Millwork

On this page we list the standard sizes and arrangement of glass, in which Bilt-Well "Clos-Tite" Casements are furnished.

In addition to the casements illustrated, a complete line of chemically treated weatherstripped, prefit, double hung windows are manufactured under the "Bilt-Well" standards.

For Bilt-Well Nu-Style kitchen units, see File Index.

Standard and special cabinet work is available either as our approved designs or in accordance with architects' details and specifications.

Specify Bilt-Well Millwork for correct design, enduring qualities, and lasting satisfaction

Andersen

COMPLETE WINDOW UNITS

Casement Windows

—

Narroline
Double Hung Windows

—

Basement Windows

★

ANDERSEN FRAME CORPORATION
BAYPORT, MINNESOTA

ANDERSEN CASEMENT WINDOW

A Complete Unit Including

FRAME • SASH • HARDWARE • SCREEN • DOUBLE GLASS WEATHER STRIPPED • FACTORY FITTED AND PRIMED

THE ANDERSEN CASEMENT is the first casement that successfully combines the weathertight advantages of wood construction with the modern, narrow-line beauty of metal. And because it harmonizes so pleasingly with almost every type of architecture, it will give added charm and value to the homes you build.

Effective weatherstripping, double glazing, and leakproof frame construction make the Andersen Casement Window exceptionally leakproof and weathertight and especially suited to the requirements of air conditioning and gas or electric heat.

Now you can have the full benefit of casement ventilation without any of the usual drawbacks. The Andersen Casement is convenient and easy to operate. It is exceptionally weathertight. It is simple in construction and easy to install. It is well proportioned and unusually attractive in appearance.

In no other casement, wood or metal, will you find all these distinctive features. It will pay you to examine them.

LEAKPROOF FRAME—Made of clear pine, with the Andersen Leakproof Locked Sill Joint, weathertight wide blind stop and mortar clinch grooves. Narrow mullion posts, transom bar and exterior moulding provide modern lines and permit large glass area. Standard design is suitable for all types of wall construction and any kind of interior and exterior wall finish.

Inside wood stops, mullion casings, and transom bar casings of pine or hardwoods are included.

IMPROVED SASH—New design prevents sticking or binding and provides two point contact. Factory fitted and glazed with either DSA or SSA labeled glass. Made of Clear Pine with exposed end wood eliminated by improved reinforced joints. Dividing or muntin bars are either solid aluminum (Style A), which are easy to clean and require no finishing, or attractively designed wood (Style W). Sash with horizontal muntin bars only or with special leaded glass panels can be furnished on order.

WEATHERTIGHT—Spring phosphor bronze weatherstrips insure a tight seal under most severe weather conditions. This improved weatherstrip is an outstanding development in casement construction.

Infiltration tests made at the University of Wisconsin show an air leakage of only 4.6 cubic feet per hour per foot of sash perimeter with a wind velocity of 15 miles per hour.

The American Society of Heating and Ventilating Engineers in a recent bulletin reports an infiltration of 16 cubic feet for the average weatherstripped double hung window under the same conditions. Note also how the above figure compares with similar tests made on other casements as reported in the 1935 Guide of the Society.

COMPLETE HARDWARE—New . . . . improved design. Easy to install. Includes:

Extension Hinges—Cadmium plated steel with brass washers.

Under Screen Sash Operators—Choice of two designs. Illustrated on page 2.

Worm Gear Type — With solid bronze housing and handle.

Bar Type—Steel, bronze finish over cadmium plating.

Locking Latch—Bronze handle. Closes sash tightly; locks it securely. Independent of screen. Automatic ejection of sash insures easy opening.

Hardware with all parts made of solid bronze can be furnished on special order.

INSIDE SCREEN—Fitted and ready to slip in place with spring bolt fasteners attached. 16 mesh gunmetal finish aluminum wire cloth. Solid aluminum frame or wood frame (Pine). Easily removed and replaced. Removal is not necessary when operating the sash.

REMOVABLE DOUBLE GLAZING—Fits on the inside of the sash. Has an aluminum frame and spring bronze seal. Glazed with DSA labeled glass. Easily and quickly slipped in place or removed from the inside. May be left in place the year round. Reduces heat loss by radiation 60 per cent. *Prevents condensation.* Particularly suited to meet the requirements of air conditioning both in winter and summer.

TREATED WOOD—All wood parts of frame and sash are protected against decay and termites with Bruce Preservative 5B in accordance with the recommendations of the E. L. Bruce Company. The toxic agent in Bruce Preservative gives positive protection against termites and a high resistance to decay, rendering the treated wood exceptionally durable.

The treatment used insures the absorption of 20 gallons of solution per thousand board feet of finished material and the retention of 6.25 pounds of toxic Beta Napthol salts per thousand board feet.

Protection against moisture during construction and before painting and added protection thereafter is provided by the addition of a Water Repellent Compound to the solution.

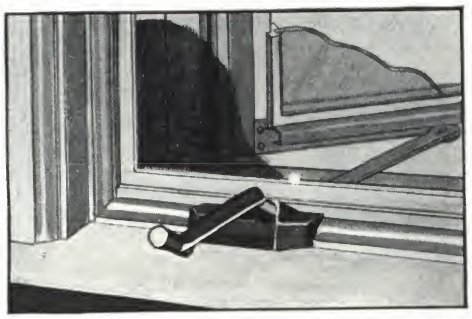
The wood is not discolored and any customary finish can be applied.

Nationally Distributed Through Lumber and Millwork Dealers

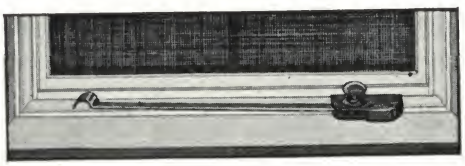
Andersen Frame Corporation

ANDERSEN CASEMENT WINDOW

Outstanding Features



Worm Gear Sash Operator—Adjusts and automatically locks the sash in any position. Just turn the handle. Powerful and easy to operate. Works independently of the screen as shown above. Neat and attractive and does not interfere with drapes, shades or Venetian blinds. Details for installing Venetian blinds will be sent on request.

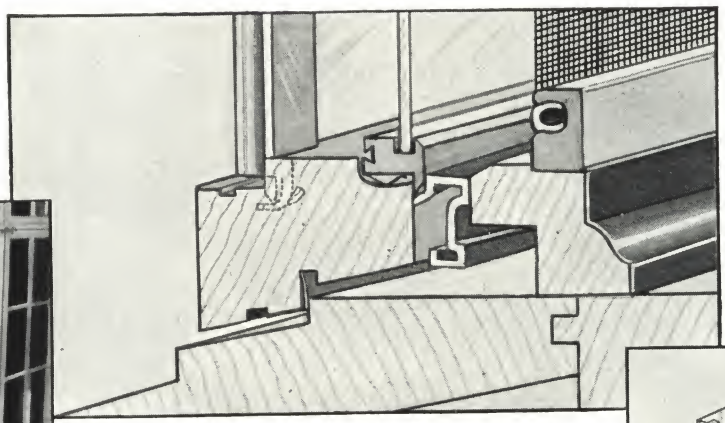


Bar Sash Operator—Works easily and smoothly. Holds sash securely in any position. This is a very satisfactory low priced operator.

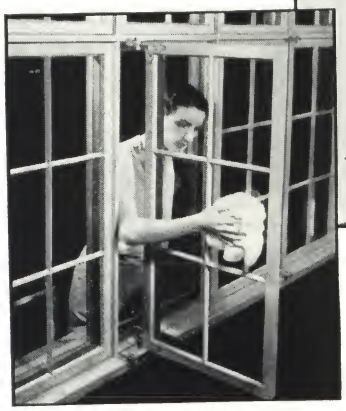
Wood Muntin Bars—New improved design combines strength with pleasing appearance. Illustration is ⅛ actual size. Aluminum muntin bar shown below is ½ actual size.

The Double Glass is easily and quickly slipped in place. It fits snugly on the inside of the casement sash and swings with it. It may be left in place the year round. It is easily removed for cleaning or summer storing.

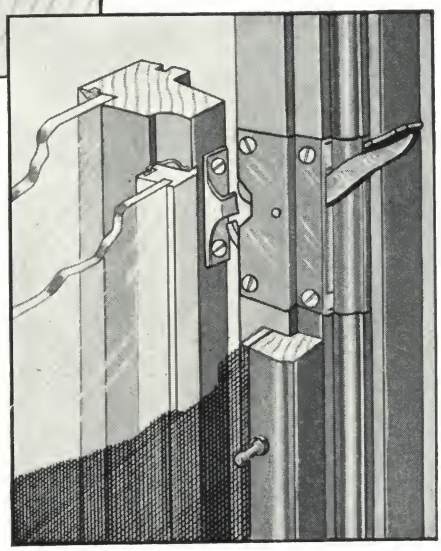
Extension Hinges (see illustration below) permit the easy cleaning of outside glass from the inside.

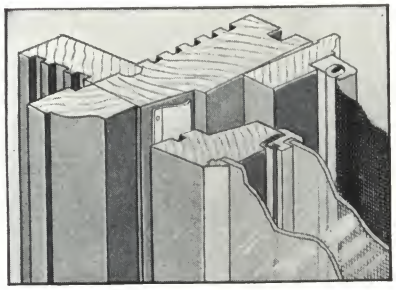


Screens—The aluminum frame screen shown in the illustration at left. Wood frame screen below. Note also aluminum screen in place on left side of illustration above. Also wood screen illustrations on page 6.

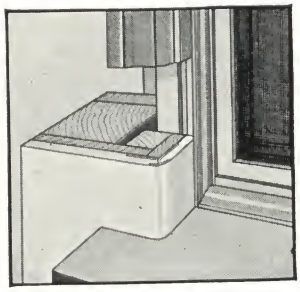


Section Through Sill and through sash at muntin bar. Note position of the operator channel and weatherstrip which is attached to bottom of sash. Note also how aluminum muntin bar is securely fastened. Also how removable double glass is held in place by the channel bar.





Section Through Jamb—Special design of sash and frame, eliminates sticking and binding. The frame is also specially designed for weathertight joining with wall in either frame or masonry construction. Note weatherstrip.



Frame and Trim are designed for either plaster reveal finish or wood casings. With plaster reveal finish, illustrated, the only additional trim required is the stool and apron.

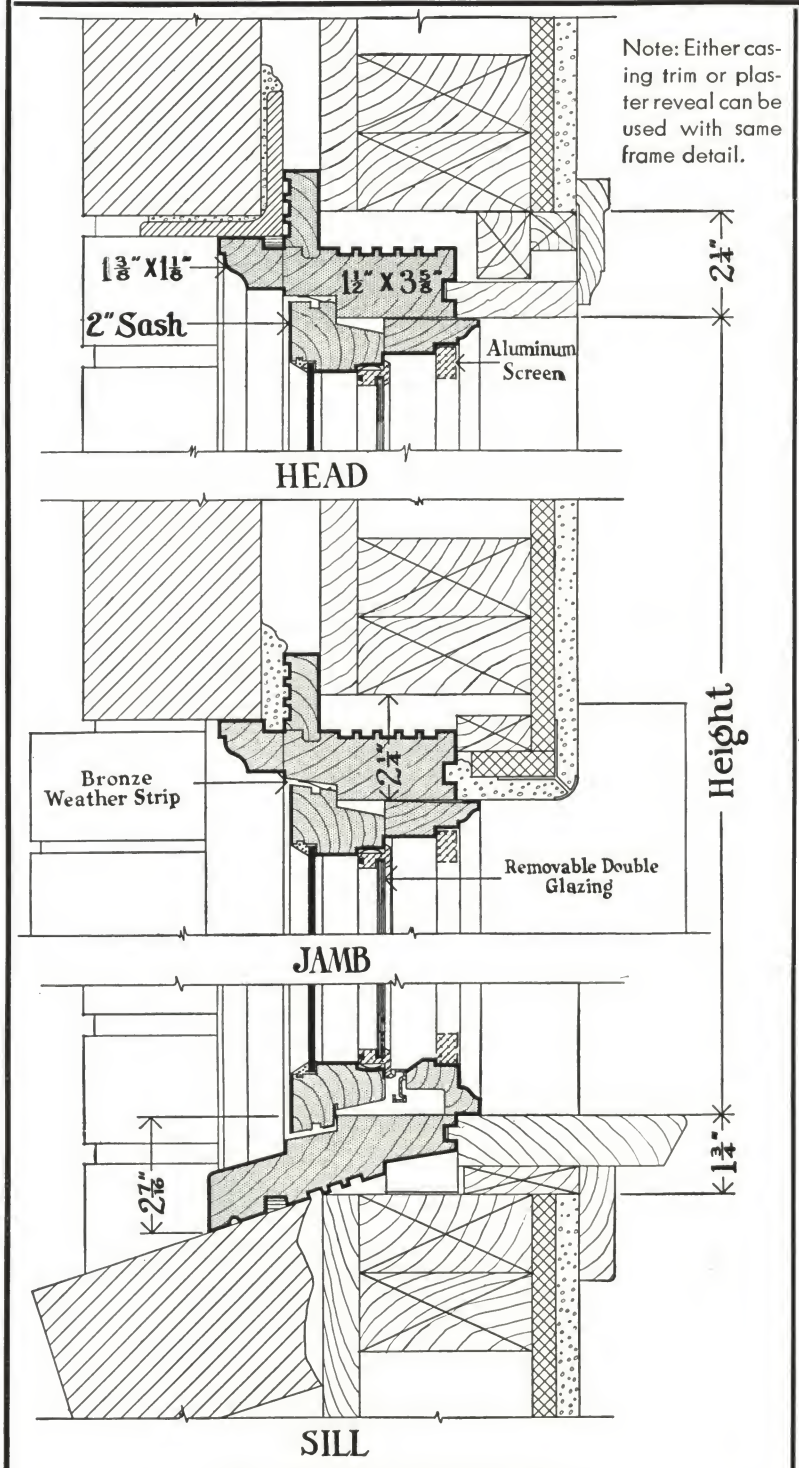
Cam and Lever Lock pulls the sash completely shut and locks it securely when closed without opening or removing the screen. It also forcibly ejects the sash when opened, making it easy to adjust the window with the sill operator. The removable air sealed, double storm glass is shown in place on the inside of the sash.

Nationally Distributed Through Lumber and Millwork Dealers

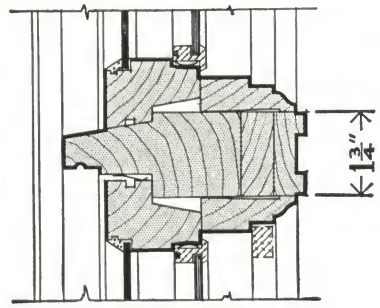
ANDERSEN CASEMENT WINDOW

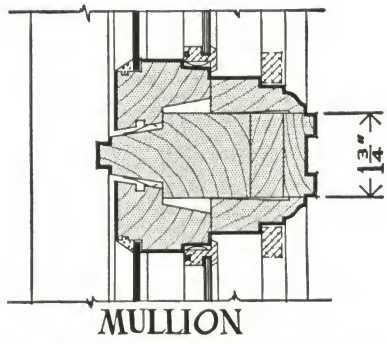
Detail of Complete Unit

NOTE—This standard unit is used in all types of frame or masonry wall construction



Scale—Three Inches Equal One Foot.
Patents Nos. 17,552, 1,648,712—Other Patents Pending.



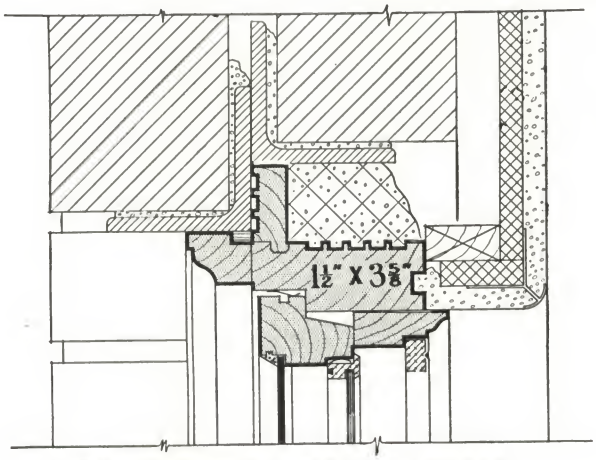


NOTES

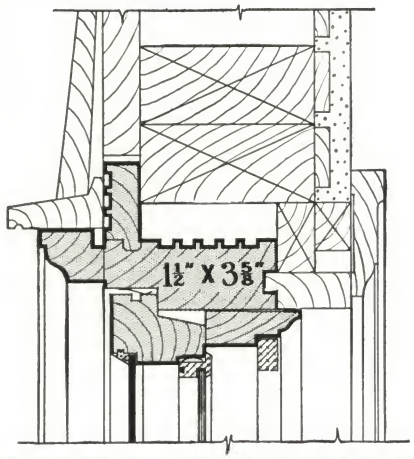
1. See TABLE OF SIZES on page 7 for unit arrangements, sash sizes and opening sizes.
2. EXTERIOR MOULDING—Any Andersen brick moulding or casing may be substituted for the brick moulding shown or units can be furnished without exterior moulding on special order. When no exterior moulding is ordered, specify length of sill horns required.
3. All inside finish stops, mullion and transom inside casing as shown on this detail are furnished as part of the unit. These parts are furnished in clear Pine unless otherwise specified. These can be furnished in other woods at an extra charge.
4. Finish moulding with screen rabbet shown in sill detail is for swinging sash only. For stationary sash the same moulding as shown at head and jamb is used at the sill.
5. BRONZE WEATHERSTRIP as shown is furnished for all openings.
6. FOR CASING TRIM AT SIDES AND HEAD—Use extension jambs instead of plaster reveal as shown.
7. For full size details or details showing adaptation of standard unit to special requirements, see local millwork dealer or write Andersen Frame Corporation, Bayport, Minn.

ANDERSEN CASEMENT WINDOW

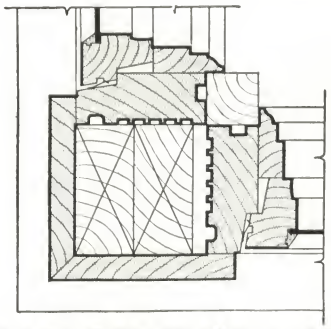
Special Adaptations



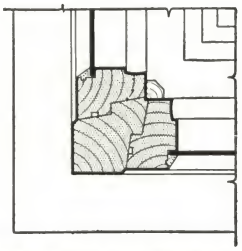
HEAD SECTION DETAIL, ¼ SCALE — Standard unit in solid masonry wall with insulating lath and plaster applied to ⅞ in. furring strips. Either interior plaster reveal finish or wood jambs and casing trim can be used.



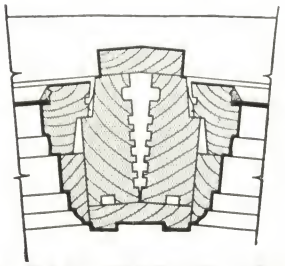
HEAD SECTION DETAIL, ¼ SCALE — Standard unit in 2x4 frame wall. Either wood casing trim with extension jamb or plaster reveal finish can be used. Unit installed in similar manner for exterior stucco.



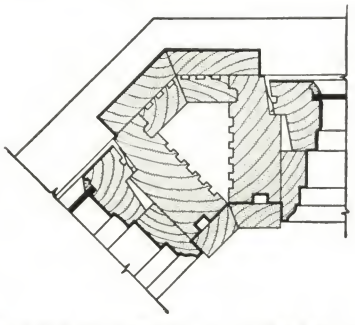
CORNER WINDOW DETAIL, 3/16 SCALE — Showing typical corner section for use where support is required above. Angle iron or I beam can be used in place of 2x4's. Exterior casings may be of metal or wood. Sash may be swinging or stationary.



CORNER SECTION, 3/16 SCALE—Use where load bearing members are not required at corner, showing special corner mullion post with stationary sash next to corner. Three inches between glass. The rest of the casement unit is the same as the standard detail shown on page 3.



RADIAL BAY WINDOW DETAIL, 3/16 SCALE—Showing section through mullion between sash, using standard straight sash with outside edge of sill and head staff bead cut to any radius. Furnished only on special order.



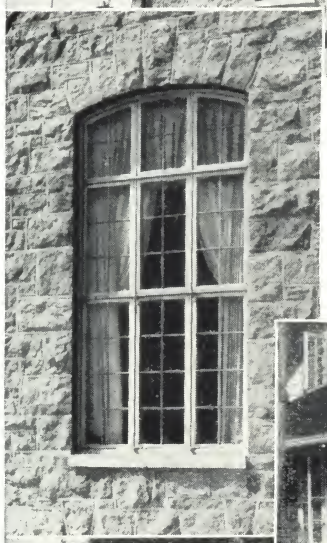
ANGLE BAY DETAIL, 3/16 SCALE—Showing section through typical angle mullion. All parts are standard stock design and construction except the exterior casing. The inside casing is not furnished as part of the unit.

Andersen Frame Corporation

ANDERSEN CASEMENT WINDOW

Typical Installations

Andersen Casements give added charm and beauty to the exterior of any home. They are well proportioned and graceful, yet sturdy in appearance. Note the effective use of stock size units in the residence above. The studio window is made from stock units with special segment head transom.



Above, stock transom units in a conservative modern type home. At right, a gable and living room window, unit 6638.

Andersen Casements are equally well suited to fine residence or summer cottage as shown above.

Above, a typical angle bay made up from stock units 8446 and 2416. See interior view on opposite page and detail on page 4.

Nationally Distributed Through Lumber and Millwork Dealers

Andersen Frame Corporation

ANDERSEN CASEMENT WINDOW

Typical Installations

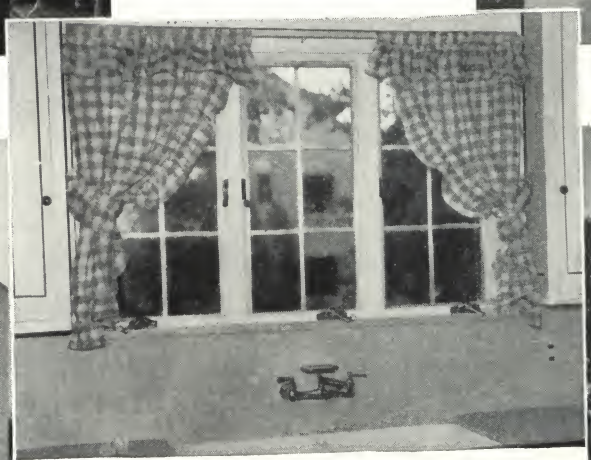
ABOVE—Leaded glass panels in standard size units. Insert shows a close-up of the large radial bay. See detail on page 4.

LEFT—Interior of radial bay, showing wood frame screen.

RIGHT—Angle bay with wood screens and bar sash operator.

BELOW—Typical modern style installation with corner window and horizontal muntin bars.

BELOW—Andersen Casements are well suited to clubs and similar public buildings.



Standard unit 6336 over a kitchen sink. Unit 4326 is used where a narrower opening is required. Note worm gear sash operators.

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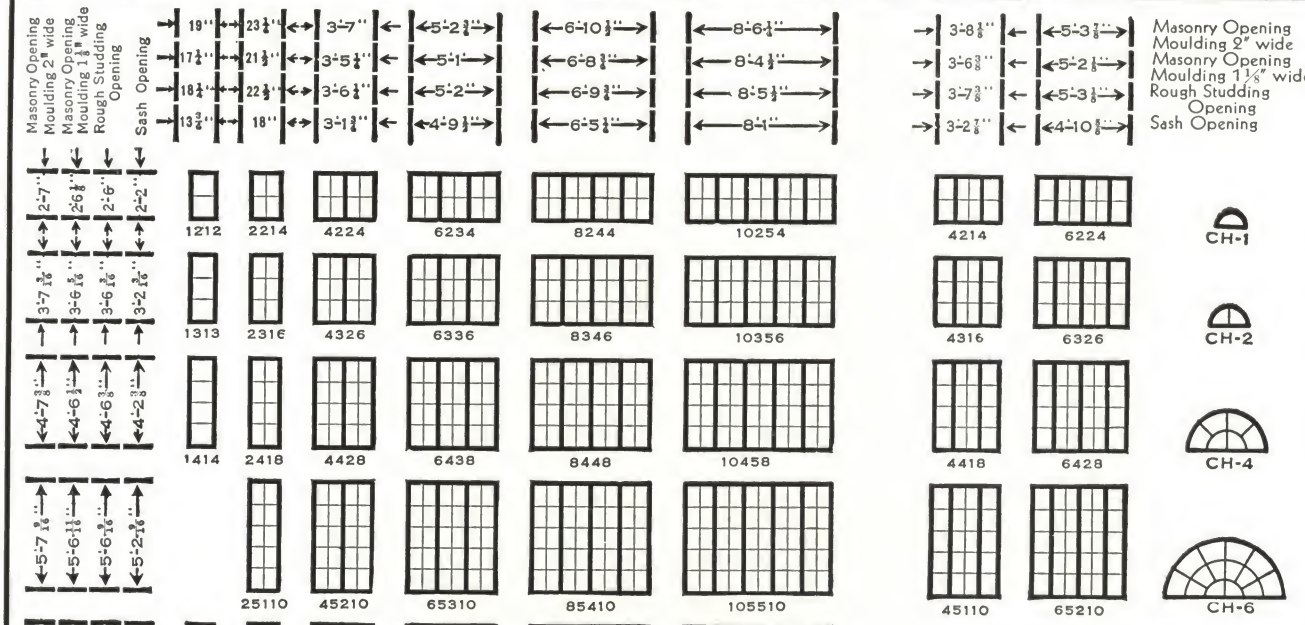
Andersen Frame Corporation

ANDERSEN CASEMENT WINDOW

Table of Sizes



Circle top transom units can be used above any square head unit of same width. Standard transom bar is used between square head sash and circle sash.

CH-2 is furnished with standard aluminum or wooden muntin bar as specified. CH-4, CH-6 and CH-8 are furnished with zinc muntins.

NOTES

1. Mullion posts between all sash. No pairs of sash without mullion centers furnished.
2. Glass size 8"x12" standard except one light wide units which have 12"x12" glass.
3. Sash layout shown is standard. Same units with horizontal muntin bars only can be furnished when so specified. Sash can also be furnished with leaded glass of any design instead of with muntin bars.
4. Main sash may be either swinging or stationary. All swinging sash open out and may be hinged to swing either right or left. When ordering specify how many swinging sash in each unit and whether hinges are to be on right or left side looking in from outside.
5. All sizes shown are standard. Wider or higher units using standard sash can be furnished on order.

Nationally Distributed Through Lumber and Millwork Dealers

ANDERSEN NARROLINE WINDOW

Double Hung Master Frame No. 600

The Andersen NARROLINE Double Hung Window is furnished as a complete double hung window with modern narrow mullions and casings, yet it retains the time-tested counterbalancing principle to insure dependable and trouble-free sash operation throughout the life of the building. It is effectively weatherstripped and is exceptionally leakproof and weathertight.

CONSTRUCTION FEATURES

FRAME—A leakproof Andersen Master Frame of improved design. See detail on following page. All parts of the frame are treated with Bruce Preservative 5B and a Water Repellent Compound, the same as the Casement and Basement Window Units. See page 1 for complete description.

COUNTERBALANCING EQUIPMENT—After experiments with many different devices for operating the sash, the time tested principle of counterbalancing weights has been retained. A specially designed flat weight with a pulley wheel permits the use of only one weight on each side in place of two. Standard equipment includes weights, sash chain cut to length and with fasteners attached and Andersen Noiseless Pulleys. The sash chain has short, heavy links especially designed for quiet operation. Tests have proved that dependable and trouble-free sash operation is assured for more than an ordinary lifetime.

FITTED SASH AND SCREENS—The NARROLINE Unit takes standard double hung sash, screens, and storm sash customarily furnished by millwork dealers. These can be obtained completely fitted and ready to install.

HARDWARE—Storm sash and screen hardware is optional equipment and includes the Andersen Automatic Storm Sash Operator, hangers for both storm sash and screens and hooks for the screen. Any standard type of hardware can also be used.

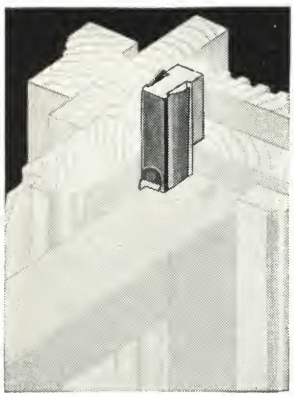
EASY TO INSTALL—The NARROLINE is simple in design and construction and is exceptionally easy to assemble and install.

WEATHERSTRIPS—The NARROLINE Window Unit is completely weatherstripped at the sides, head, check rail and bottom rail with Andersen Bronze Weatherstrips. A standard test made in July, 1935 at the University of Wisconsin by D. W. Nelson, Engineer in charge of Air Leakage Tests, shows that Andersen Weatherstrips for double hung windows reduce air leakage 86.2%.

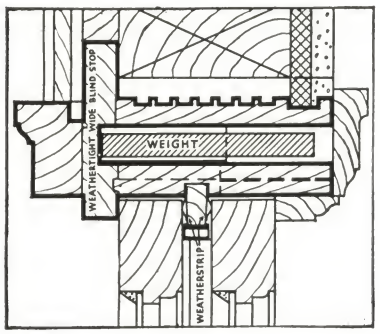
Comparative figures for air leakage in cubic feet per hour per foot of sash perimeter with a wind velocity of 15 miles per hour are as follows:

	Cubic Feet
Unweatherstripped window	51.5
Same with Andersen Weatherstrips	7.1
*Average for weatherstripped double hung windows	16.0

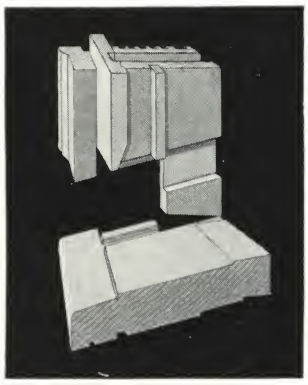
*From the Journal of American Society of Heating & Ventilating Engineers.



Andersen Weatherstripped Parting Stop in side jamb showing spring bronze metal on wood stop and bronze check rail block.



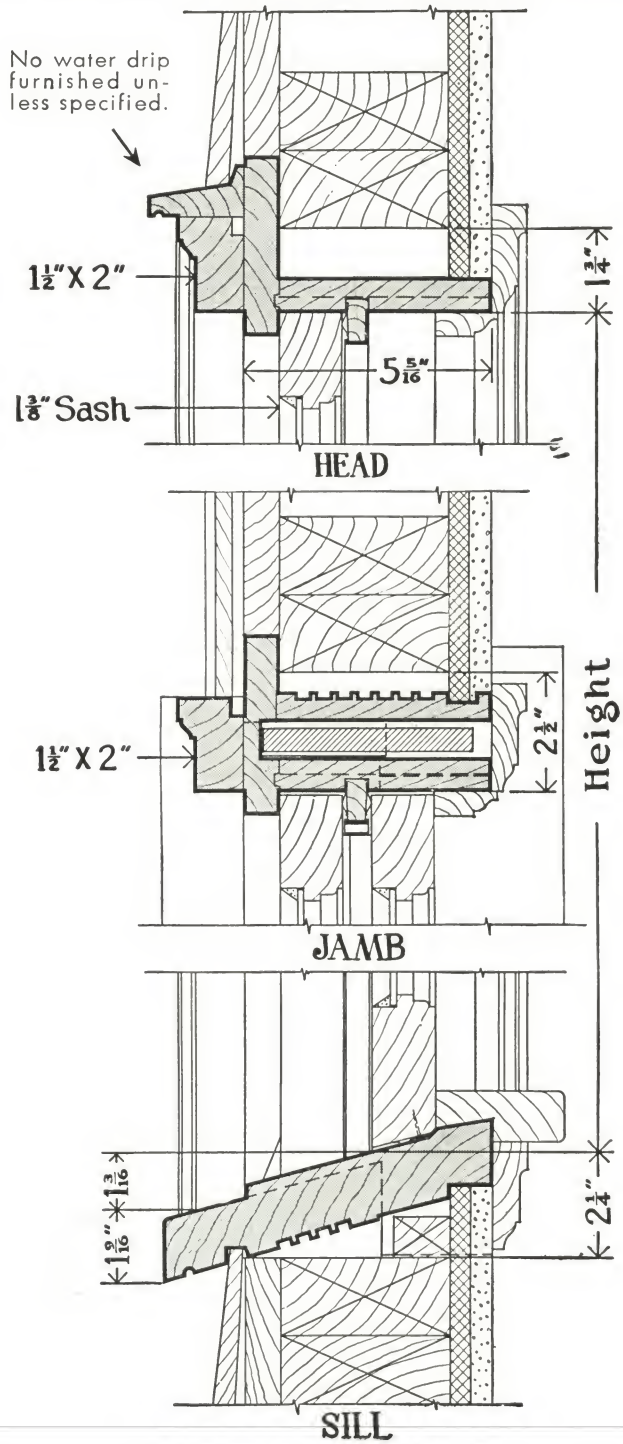
Inside casing can be as narrow as 2½ inches. Exterior moulding is suitable for siding, stucco or brick. Any other moulding or casing can be substituted.



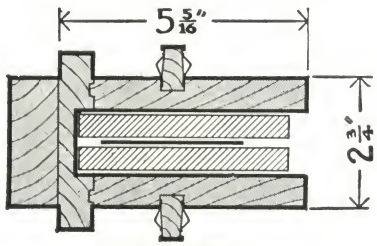
The famous ANDERSEN LEAKPROOF LOCKED SILL JOINT with steep sill slope.

ANDERSEN NARROLINE WINDOW

Double Hung Master Frame No. 600



SCALE—Three Inches Equal One Foot
Patents Allowed and Pending



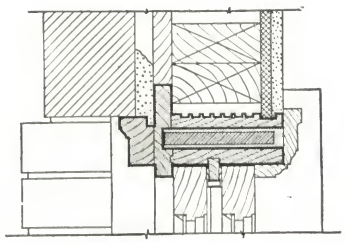
MULLION

NOTES

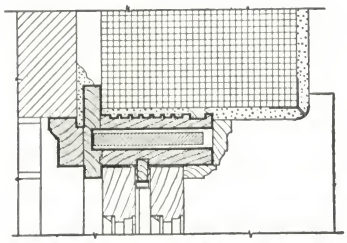
1. Water drip No. 923 shown on head brick moulding furnished only when specified.
2. Andersen Weatherstrip for complete opening, including bronze strip for check rail and bottom rail furnished as standard equipment.
3. Special weights and sash chain cut to correct length with fasteners furnished for each opening.
4. Exterior moulding No. 908, shown on detail, is standard on all frames. Any other Andersen brick moulding or casing furnished on special order.
5. All parts except inside sash run completely primed with aluminum paint.
6. Available in all standard frame sizes.

WIDTHS—Every 2 in. from 1′-4″ to 4′-4″ inclusive and in addition 2′-1″, 2′-5″, 2′-7″, and 2′-9″.

HEIGHTS—Every 4 in. from 2′-6″ to 7′-2″ inclusive and in addition 3′-0″ and 4′-0″.



Detail ⅛ size showing frame No. 600 in brick veneer wall. Moulding 1½″ thick permits adequate space between brick and sheathing with same jamb width.

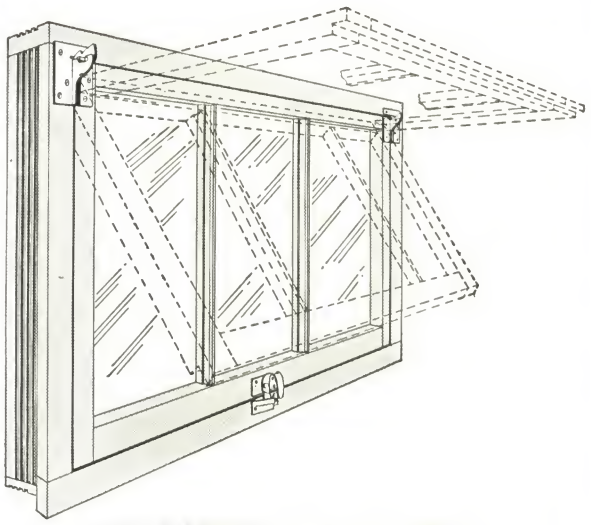


Same frame in masonry wall with plaster reveal finish. Extension jamb and casing trim may be used in the regular way.

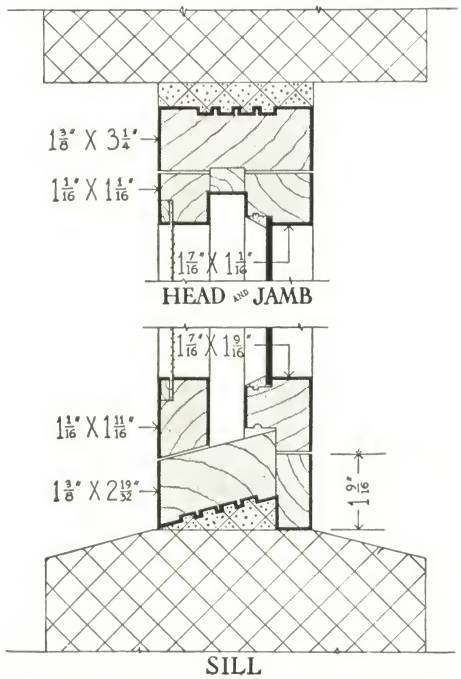
ANDERSEN BASEMENT WINDOW

A Complete Unit Including

FRAME • SASH • HARDWARE • SCREEN



FROM THE INSIDE—Note two open positions in which sash is automatically held. Sash is easily removed when open by simply lifting it out of the frame. The strong lock holds the sash tightly in the closed position.



Scale—Three Inches Equal One Foot.

FRAME—Manufactured of Clear Pine. The design of the frame makes it suitable for any wall. Mortar clinch grooves anchor the frame and eliminate leaking of water, dust, and air around the frame. The frame is set up and all hardware is applied at the factory.

SASH—Glazed and Factory Fitted. Stiles and Rails are designed for sturdiness and to give maximum light. Bottom rail is rabbetted to make watertight joint between sash and sill. The sash is hung in frame at factory.

SCREEN—Factory Fitted, 16 mesh Aluminum Screen Cloth. Installed in frame at factory.

HARDWARE—Hinges automatically hold sash securely in two open positions without rattling. Cam lock closes sash tightly; also automatically ejects it for easy opening. Special inside screen fasteners can also be used for storm sash. All hardware parts are cadmium plated.

TERMITE AND DECAY PROTECTION—All wood parts of frame, sash, and screen are protected against decay, termites, and moisture absorption with Bruce Preservative No. 5B with the addition of a Water Repellent Compound in accordance with recommendations of the E. L. Bruce Company.

The treatment used is that fully described on page 1 under the heading "Treated Wood." The wood is not discolored and any customary finish can be applied over it.

The toxic agent in the preservative gives protection against termites and resistance to decay, and the water repellent compound gives protection against moisture during construction.

PACKING—The complete assembled unit is shipped in a carton with double protection for the glass.

STANDARD SIZES

Glass Sizes		Masonry Opening Size
8x12 in.	Two Light	21 x17⅜ in.
10x12 in.	Two Light	25 x17⅜ in.
10x16 in.	Two Light	25 x21⅜ in.
12x16 in.	Two Light	29 x21⅜ in.
12x18 in.	Two Light	29 x23⅜ in.
12x20 in.	Two Light	29 x25⅜ in.
8x10 in.	Three Light	29¼x15⅜ in.
8x12 in.	Three Light	29¼x17⅜ in.
9x10 in.	Three Light	32¼x15⅜ in.
9x12 in.	Three Light	32¼x17⅜ in.
9x18 in.	Three Light	32¼x23⅜ in.
10x12 in.	Three Light	35¼x17⅜ in.
10x14 in.	Three Light	35¼x19⅜ in.
10x16 in.	Three Light	35¼x21⅜ in.
10x18 in.	Three Light	35¼x23⅜ in.
10x20 in.	Three Light	35¼x25⅜ in.
12x18 in.	Three Light	41¼x23⅜ in.

Andersen

COMPLETE WINDOW UNITS

Casement Windows

—

Narroline
Double Hung Windows

—

Basement Windows

★

ANDERSEN FRAME CORPORATION
BAYPORT, MINNESOTA

SECTION 11

CONTINUED ⟶

CURTIS COMPANIES SERVICE BUREAU

CLINTON, IOWA

CURTIS BROS. & CO., Clinton, Iowa
CURTIS & YALE CO., Wausau, Wis.
CURTIS DOOR & SASH CO., Chicago, Ill.
CURTIS SASH & DOOR CO., Sioux City, Iowa
CURTIS TOWLE & PAINE CO., Lincoln, Neb.
CURTIS TOWLE & PAINE CO., Topeka, Kan.
CURTIS YALE PURVIS CO., Minneapolis, Minn.
CURTIS COMPANIES, INC., Clinton, Iowa

PRODUCTS

Silentite Pre-Fit Window Units, Mitertite Door and Window Trim.

Exterior and Interior Doors, Entrances, Windows, Frames, Trim, Moldings, Panel Work, Sectional Cabinet Units, Cabinet Work, Mantels, Stairways, Garage Doors, Screens, Shutters, Storm Doors and Windows.

For our pages on Curtis Standard Kitchen Units and Curtis Doors and Woodwork, see File Index.

CURTIS SILENTITE WINDOW UNIT

Advantages

SILENTITE "Pre-Fit" FRAME · WINDOW · SCREEN AND STORM SASH

Four years of use under all conditions and in all climates, preceded by one year of field and laboratory testing, have proved the unusual values of this complete window unit—frame, sash, storm sash, screen, and trim—all pre-fitted at the factory, all harmonized into a single, integrated unit. Silentite offers these outstanding advantages:

(1) A sturdy double-hung wood window designed in sound architectural traditions and correct with all architectural styles, yet providing new achievements in the beauty of narrow trim, mullions, and outside frame.

(2) A material economy resulting from the far lower cost of installing windows entirely pre-fit at the factory to tolerances usually found only in machinery. Thus, the manufacturer is responsible for satisfactory operation of the window. Unlike any other window in this respect, the sizes of frames, windows, storm sash and screens are all controlled by Curtis.

(3) Simplified specification, buying, and installation resulting not only from factory-fitting of all component parts, but because *one basic frame fits all types of wall construction.*

(4) Unprecedented ease of operation as a result of perfect fit and new type weatherstripping. Silentite Windows operate easily, winter or summer, year in and year out.

(5) A greater degree of weathertightness and heat insulation. Infiltration is prevented between window and frame *and* between frame and wall. Thus Silentite is ideal for use in up-to-date insulated homes. Or it provides better insulation in remodeled buildings.

(6) Longer life and lower depreciation as a result of special antirot dip.

Spring Balanced and Fully Weatherstripped

Two revolutionary improvements are combined in the Silentite Window: the elimination of clumsy weights in favor of tempered, non-corrosive steel springs inserted in the jambs; and the provision of full metal-to-metal contacts between sash and frame to assure permanent ease of operation, compensation for swelling of wood, and maximum weathertightness. Actual laboratory tests show the Silentite Window to be five times as weathertight as ordinary double-hung sash, while the dust-storm areas have provided much evidence as to the practical tightness of these windows.

Dipped to Prevent Rot

Frame and sash are of Ponderosa pine, dipped before glazing in a special toxic oil to render them proof against wood-destroying fungi. Pores are sealed against moisture, shrinking and swelling is minimized, a better base provided for painting.

One Basic Detail for All Wall Types

Effective standardization permits use of the Silentite Window in any type of wall, simply by a change in jamb liners and brick mold. Shown herewith is the basic frame detail (Fig. 4) and a frame (Fig. 5) as adapted for use in a masonry wall. It will be noted that the outside casing, the blind stop, the jamb, and the parting stop are the same in both. Only the jamb liner and brick mold differ.

Standardized Silentite frames are available for the following wall types:

Frame Number	For Wall Type
C-1515	3 5/8" stud wall—siding or shingles.
C-1516	3 3/4" stud wall—siding or shingles.
C-1517	3 5/8" stud wall—siding or shingles, insulation inside.
C-1519	3 5/8" stud wall—stucco with 3/4" furring.
C-1520	3 5/8" stud wall—stucco with 3/4" furring.
C-1521	3 5/8" stud wall—stucco with 3/4" furring, insulation outside.
C-1523	Brick veneer, 5 3/16" jambs. Can also be used in masonry wall.
C-1524	Brick veneer, 5 1/8" jambs.
C-1526	Masonry 4 7/8" jambs with sub-jambs.
C-1527	Masonry 5 1/8" jambs with sub-jambs.
C-1528	Masonry 5 5/16" jambs with sub-jambs.

Varying widths of stops are available for the frames tabulated above.

Mitertite Trim

A new trim finished with "machine shop accuracy" and available in pre-fit form for use with Silentite Windows. As an indication of how much simpler Mitertite is to install, a single side of Mitertite trim can be applied in 13 minutes as compared with 55 minutes required for the preparation and application of ordinary cut-to-length or lineal trim.

Head casing and head stop are cut to exact length and mitered. Side casing and side stops are each mitered on top side and cut 1 in. long. Stool and apron are cut to exact length and both returned on the solid. The stool is notched.

Mitertite is narrower and better looking. Mitertite eliminates open, unsightly joints. A new patented joint construction is more than twice as strong as the ordinary butt miter reinforced with a clamp nail or spline. Mitertite is available not only for use with Silentite Windows but as interior trim for doors. Once installed, it "stays put."

Fig. 1. Narrow, Graceful Mullions Made Possible by Silentite Window Design

This means more window area, less space wasted in trim—or conversely, less sacrifice of wall area to secure a desired amount of fenestration

Fig. 2. Silentite Is a Complete Wood Window Unit

Frame, sash, and trim—even storm sash and screen—are all harmonized into a single unit

Fig. 3. Silentite Windows Shown in Masonry, Brick, and Wood Siding

You are never restricted in the use of Silentite. The same basic frame is used regardless of wall construction

Storm Sash and Screens

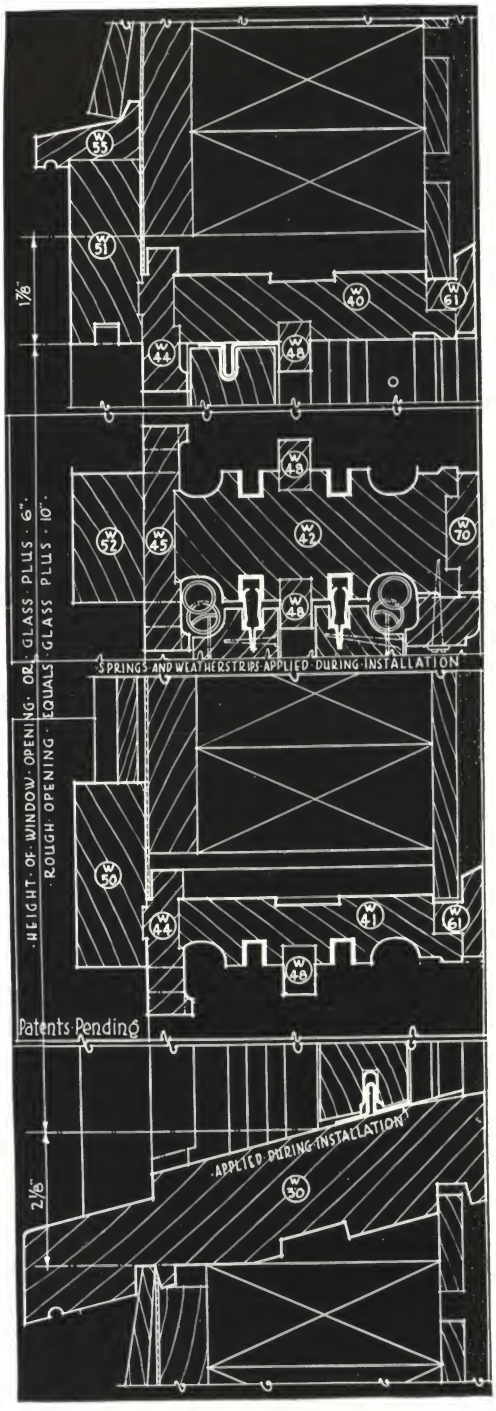
Pre-fit at the factory and harmonized with the window are available for all Silentite Windows. Installation costs are lower and permanent fit assured. Quickly hung with longer-lived and less expensive hardware.

Curtis Protectorvent Storm Sash for use with Silentite Windows permits better control of ventilation plus the great advantage of being able to introduce fresh air at either top or bottom, without moving the storm sash itself.

Literature

Complete literature and Architect's Detail Sheets are available upon request. Silentite Window Units are on display (East of the Rockies) at most Curtis dealers. We shall be glad to advise you of the nearest one.

1866 CURTIS WOODWORK



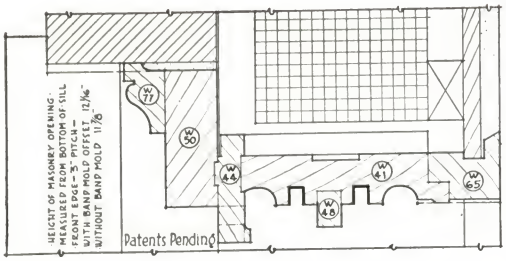


Fig. 6. (Below) Application of Mitertite Trim to Silentite Frame

Note narrowness, and nailing surface—direct to stud. This design, the Madison, finishes $1\frac{5}{8}$x2¼ in. Here liner (W63) provides jamb width necessary to accommodate full 3¾-in. studs with lath and plaster. Another design, the York (of popular back band type), finishes ¾x2¼ in. There is an economical prefit Mitertite Trim for each Silentite frame

Fig. 5. Silentite Frame for a 10-in. Masonry Wall

Compare with detail shown at left. Only the inside plaster ground liner (W65) differs. All other parts are standardized for all types

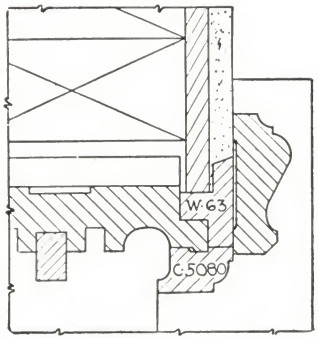


Fig. 4. Basic Construction of Silentite Window Unit

This detail shows the frame for a 3⅝-in. stud wall, siding or shingles, $5\frac{3}{16}$-in. jamb. Note small space required for spring counterbalances making possible narrow, solid mullion. Note metal-to-metal contacts between sash and frame, with a full $\frac{3}{16}$-in. clearance to compensate for the necessary coats of paint, any movement in the wood of sash or frame and to prevent bothersome paint-binding

STOCK SIZES AND DESIGNS OF WINDOWS

Silentite Pre-Fit Windows are glazed with SS Lustraglass, pre-fitted for Silentite Frames. All opening sizes are based on 4x6 wood allowance. Pre-fitted storm sash with unique ventilating features and Pre-fit Screens of improved detail are available as stock in these same opening sizes.

Sash opening size, ft. in. x ft. in.	C-2652 2 Lt., in.	C-2654 4 Lt., in.	C-2660 6 Lt., in.	C-2668 8 Lt., in.	C-2686 6 Lt. over 1 Lt., in.	C-2672 12 Lt., in.	C-2676 16 Lt., in.
1- 8x3-10	16x20	.....	.....	8x10	16x20	.....	.....
1-10x2- 6	18x12	9x12	.....	.....	18x12	.....	.....
x4- 6	.....	.....	.....	9x12	.....	.....	.....
2- 0x3- 0	20x15	.....	.....	.....	20x15	6⅔x 7½	.....
x3- 6	20x18	.....	.....	.....	20x18	6⅔x 9	.....
x3-10	20x20	.....	.....	.....	20x20	6⅔x10	.....
x4- 2	.....	.....	.....	.....	20x22	6⅔x11	.....
x4- 6	20x24	.....	.....	10x12	20x24	6⅔x12	.....
x4-10	20x26	.....	.....	.....	20x26	6⅔x13	.....
x5- 2	20x28	.....	.....	10x14	20x28	6⅔x14	.....
2- 4x3- 0	24x15	.....	.....	.....	24x15	8 x 7½	.....
x3- 6	24x18	.....	.....	.....	24x18	8 x 9	.....
x3-10	24x20	.....	.....	.....	24x20	8 x10	.....
x4- 2	.....	.....	.....	.....	24x22	8 x11	.....
x4- 6	24x24	.....	.....	.....	24x24	8 x12	.....
x4-10	24x26	.....	.....	.....	24x26	8 x13	.....
x5- 2	24x28	.....	.....	.....	24x28	8 x14	.....
2- 7x3- 0	27x15	.....	.....	.....	27x15	9 x 7½	.....
x3- 6	27x18	.....	.....	.....	27x18	9 x 9	.....
x3-10	27x20	.....	.....	.....	27x20	9 x10	.....
x4- 2	.....	.....	.....	.....	27x22	9 x11	.....
x4- 6	27x24	.....	.....	.....	27x24	9 x12	.....
x4-10	27x26	.....	.....	.....	27x26	9 x13	.....
x5- 2	27x28	.....	.....	.....	27x28	9 x14	.....
2-10x2- 6	30x12	.....	10x12	.....	30x12	.....	.....
x3- 0	30x15	.....	.....	.....	30x15	.....	.....
x3-10	30x20	.....	.....	.....	30x20	10 x10	.....
x4- 6	30x24	.....	.....	.....	30x24	10 x12	.....
x4-10	30x26	.....	.....	.....	30x26	10 x13	.....
x5- 2	30x28	.....	.....	.....	30x28	10 x14	.....
3- 0x3-10	.....	.....	.....	.....	.....	.....	8x10
x4- 6	32x24	.....	.....	.....	32x24	.....	8x12
x4-10	32x26	.....	.....	.....	32x26	.....	8x13
x5- 2	.....	.....	.....	.....	32x28	.....	8x14
3- 4x4- 6	.....	.....	.....	.....	.....	.....	9x12
3- 8x4- 6	.....	.....	.....	.....	.....	.....	10x12

FARLEY & LOETSCHER MFG. CO.

ESTABLISHED 1875

Manufacturers of "Qualitybilt" Building Woodwork—Sash, Doors, Frames, Blinds, Screens, Mouldings, Stairwork, Cabinet Work

DUBUQUE, IOWA

For Disappearing Stairways, see File Index

"UNIPAK"

TRADE-MARK

WOOD CASEMENTS

(Patents Pending)

A New Casement

"Unipak" is a distinctly new and different casement, unlike anything heretofore offered to builders. It was designed and built with a background of over sixty years' experience in the manufacture of high grade windows and embodies everything desirable in a casement—weathertightness, double glazing, screening, simple hardware, quick installation, easy operation, durability and real beauty. It discards the old method of fitting and hanging casement sash directly to the frame with its thick mullion posts and transom bars. It comes complete with all hardware and accessories supplied, factory weatherstripped, fitted and rotproofed and eliminates all installation uncertainties.

Typical Group of "Unipak" Casements

With center unit stationary. Vertical bars can be omitted to make horizontal lights 18⅞x12 in. if desired

Construction

Design—"Unipak" Casements are built in two parts; Outer Frame and Inner Units.

Outer Frame, consisting of the minimum parts necessary to frame the opening is installed as the walls are erected. This outer frame has no mullion posts or transom bars. These are formed by the inner units when installed later.

Inner Units, stationary or consisting of prefitted sash with their surrounding frames, completely hinged and weatherstripped at factory, are installed preferably after plastering by attaching to outer frame with heavy screws.

Material—Frames and sash are made of clear W.P. Pine, chemically treated with a toxic solution to resist decay, termites and water absorption. Will not corrode, sweat or scale. With occasional painting, need never be replaced. Sash are full 2-in. thick, glued with waterproof glue and pinned. Bars are ¼ in. between glass with deep putty rabbet.

Leakproof Assembly—Air leakage is practically eliminated. There are no opening joints around transoms or stationary units. Blind stops and sill overlap studding or key in masonry. Operative units have four points of contact at head and three points at side and sill. Heavy zinc cap with drain protects top of sash from weather.

Exterior View

The exterior lines of "Unipak" are strictly modern in design. Suitable for any type of wall construction, frame or masonry

Hardware

Hinges—Extension type on 200 Series units. Applied at factory. Made of heavy steel cadmium plated with brass pins and knuckle washers. Close up hinges applied on narrow 100 Series units.

Sash Operator—Under the screen worm and gear type "Windor," made by Casement Hardware Company. Holds sash in any desired position. Fully concealed in stool. Operator crank only exposed. Cadmium plated steel crank is statuary bronze over cadmium with brass handle.

Sash Lock — Special semi-rotary type, operates without screen interference. Draws sash up tight at top as well as bottom. Automatically ejects sash slightly when opening. Statuary bronze finish over cadmium plated steel. Dropped forged brass handle, statuary bronze finish.

Screen

Fits inside, out of weather. Extruded aluminum narrow frame, wired with 16-mesh aluminum wire. Fitted with spring bolts in sides of frame. Removed in a moment's time. Requires no fitting or painting.

Double Glazing

Double glazing panel has narrow white metal frame, requires no fitting or painting. Fits snugly in rabbet on inside of sash, either stationary or operative type. Fastened with clips, easily removed. Left in place the year round and removed only for occasional cleaning between glass. Prevents sweating or frosting of glass and reduces heat loss by radiation 60%. Meets all requirements of air conditioning.

Weatherstripping

Compression type spring bronze weatherstrip is applied at factory around all operative sash; insures positive seal around entire opening.

Utmost Convenience

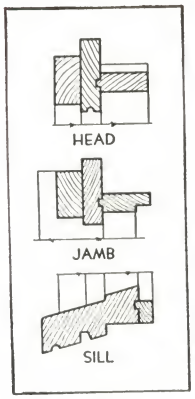
"Unipak" Casements provide easy control and positive locking of sash. Extension hinges solve window washing problems.

There are no storm sash or screens to fit, hang and paint; to put up and take down every season and repaint every few years.

Details and Information

Complete Catalog and other literature together with details for unusual installations will be sent on request. Write us about your problems. Address Dept. S36.

"UNIPAK" WOOD CASEMENTS



Outer Frame

Installed as walls are erected. Factory fitted and rotproofed ready to assemble. Only two vertical and two horizontal parts required for single unit or group installation

100 Series

At left, operative
At right, stationary

200 Series

At left, operative
At right, stationary

Inner Units

These are attached to outer frame with screws. The 100 Series has sash opening 1 ft. 2 in. wide; the 200 Series has sash opening 1 ft. 8 in. wide. They are furnished in various heights (2 to 7 lights of glass high). All units are completely fitted at factory, ready to install. Holes for attaching screws are drilled and screws are furnished.

Operative Units are hinged and fully weatherstripped.

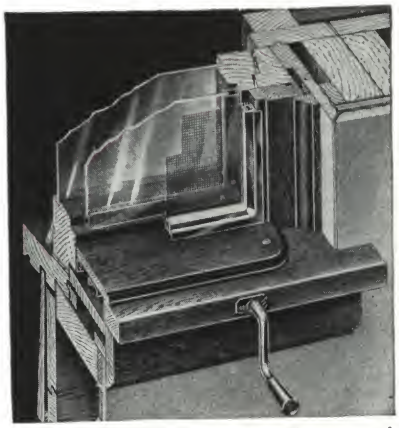
Note at right how mullions and transom bars are formed by inner units.

Units may be completely painted before installing.

Simplicity of Installation

This shows the ease and simplicity of installation. Inner units are entirely installed from inside of building, preferably after plaster is dry

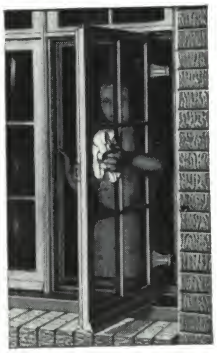
OUTSTANDING "UNIPAK" FEATURES



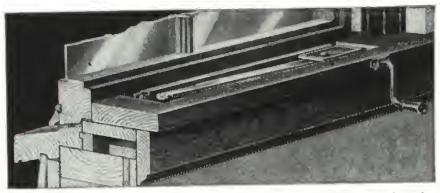
Section showing narrow line beauty and compactness of units with deep reveals both inside and outside. Permits generous plaster returns in standard 2x4 stud walls. Wood trim can also be used

Heavy zinc caps are applied to top edges of all operative sash. These protect the ends of stiles and top rails and drain off any moisture

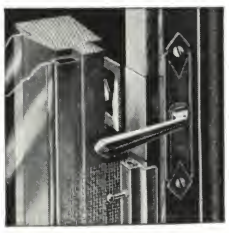
Screens and double glazing panels on inside. Easily removed or installed



Glass easily washed on both sides from inside of building



Operator cover removed to show notching of 1 1/16 in. stool to enclose operator



Lock operated without screen interference. Picks up sash when about ½ in. of closed position

Irregular Heads

Circle top, segment head or other irregular head treatment, can be had over standard Unipak units. These are made either irregular in and out or square inside as desired. Be sure to specify. Such transoms are always stationary and usually furnished in one section. Installed same as standard units by attaching to outer frame with screws

Beauty—Compactness of construction, relatively thin mullions and transom bars, deep reveals inside and outside, produce an installation of rare beauty.

Economy—Surprising as it may seem, "Unipak" Casements, with all their unusual, superior features, cost less than the cheapest type steel casements, with similar operating device.

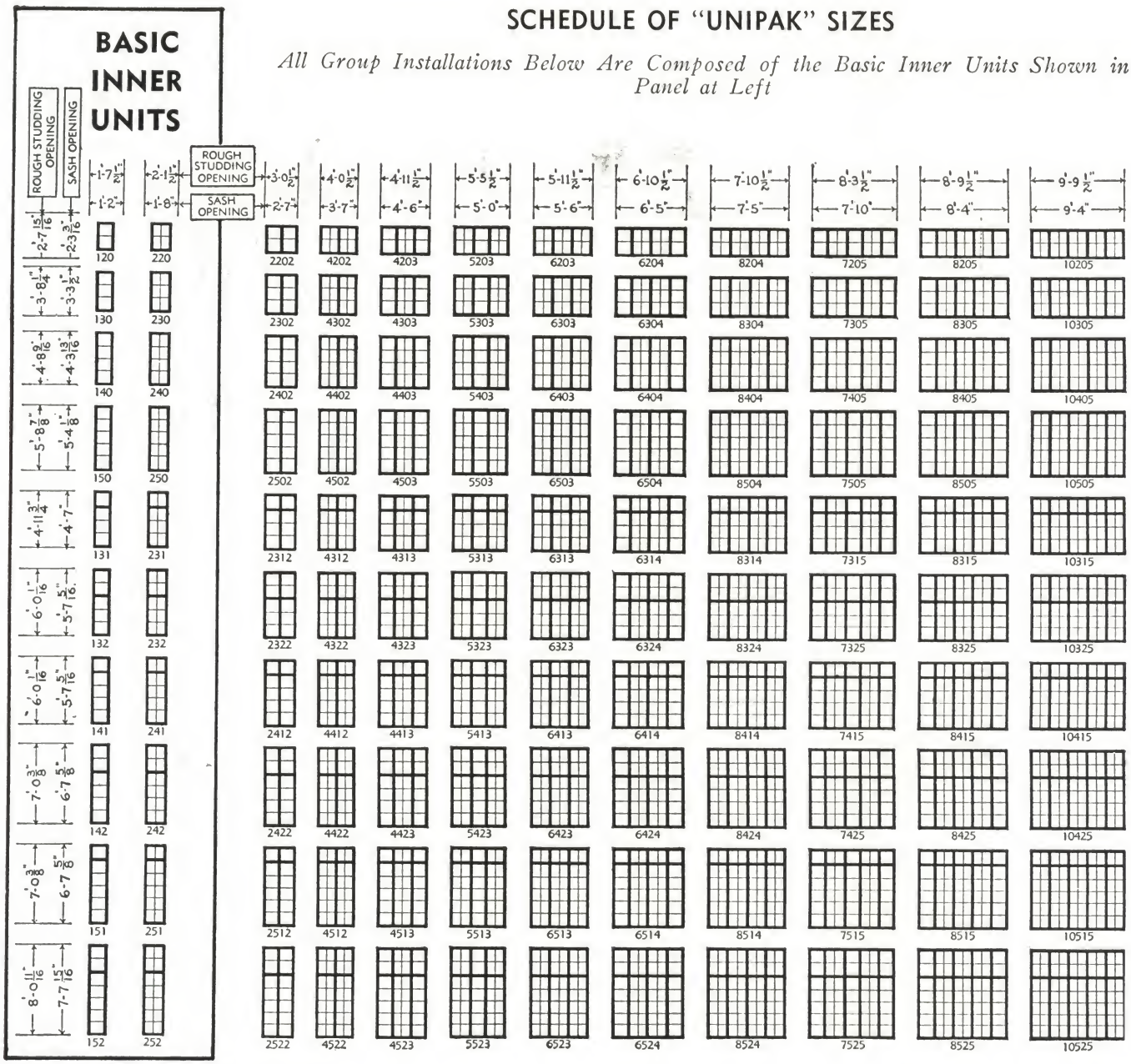
If judgment is exercised in the selection of operative and stationary units, their installed cost is very little more than ordinary double hung windows.

Note: The ventilating area of casements is about twice that of double hung windows, so that usually half of the units may be stationary.

Transom Heads—These add charm and protect drapery valances and shades. When sash are open, shades are drawn to transom bar line without danger of being blown or damaged by the wind.

SCHEDULE OF "UNIPAK" SIZES

All Group Installations Below Are Composed of the Basic Inner Units Shown in Panel at Left



Installation

"Unipaks" may be installed as single units or combined to produce the various groups shown above.

Units are furnished operative and stationary. For every operative unit there is a corresponding stationary unit to match perfectly.

All operative sash open out.

All transoms are stationary.

Mullion posts between all sash. No pairs of sash without mullion posts furnished.

All operative sash are hung to inner frame and fully weatherstripped at factory.

Hardware and accessories including operators, sash locks, screen and double glazing panels shipped with inner units. Double glazing panels attached in place.

All Sizes Shown Are Standard

Units of the 100 Series have sash opening 1 ft. 2 in. wide, glass size $12\frac{5}{16}$ x 12 in.

Units of the 200 Series have sash opening 1 ft. 8 in. wide, glass size 9 x 12 in.

Divisions of glass, other than shown, can be supplied in standard openings, or all muntins may be omitted for glazing with art or special glass when so ordered.

Special sash opening sizes can also be furnished but at considerable extra cost. Order standard sizes and save money.

Note the Following When Ordering

Specify how many operative sash in each group and whether sash are to be hinged on right or left side looking in from outside.

Specify type of wall construction.

Specify type of interior trim (plaster return or casing) and kind of wood.

Specify if screens and double glazing are to be furnished.

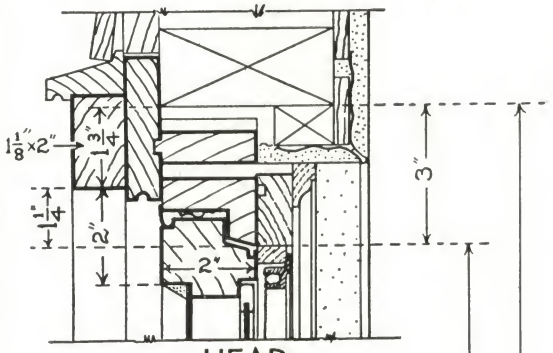
Specify kind of glass.

The following example will be of assistance: 1 "Unipak" Casement Group No. 6314—Brick Veneer 2x4 stud wall, Sash glazed SS. Include screens and double glazing panels. Red Gum Trim for plaster returns. Two Units No. 231 Operative, 1 Right Hand, 1 Left Hand.

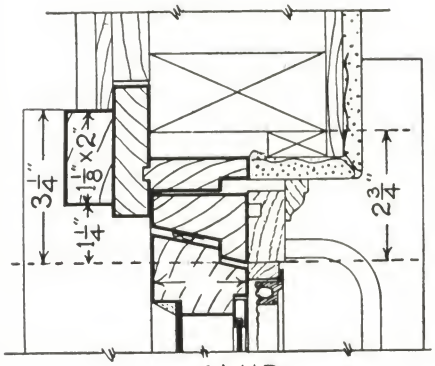
"UNIPAK" CASEMENT INSTALLATION DETAILS

STANDARD OPERATIVE UNIT

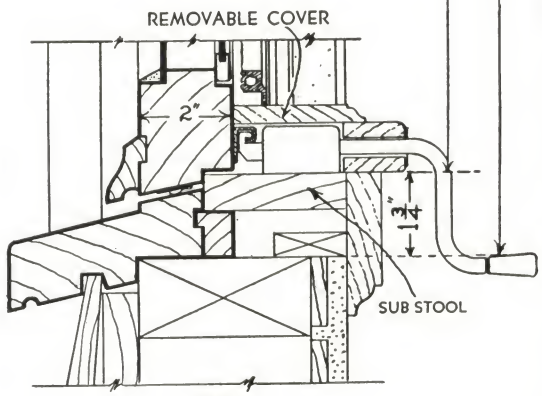
SAME FRAME ADAPTED TO ALL TYPES OF FRAME AND MASONRY WALLS



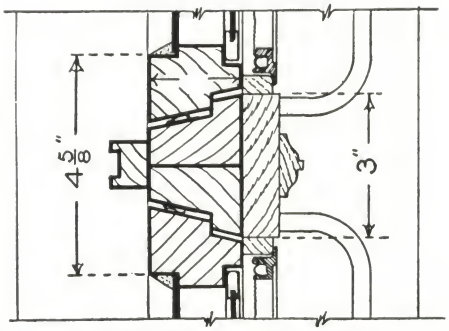
HEAD
WITHOUT TRANSOM



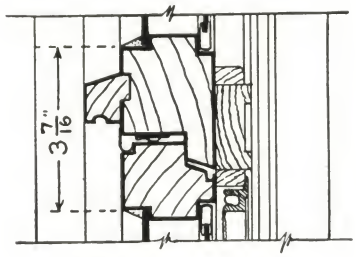
JAMB



SILL



TYPICAL MULLION
BETWEEN HINGED UNITS

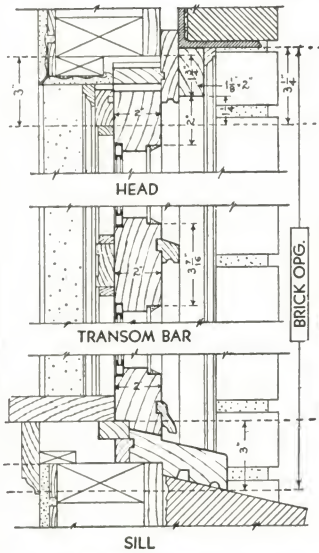


TRANSOM BAR

SCALE — 3" = 1 FT.

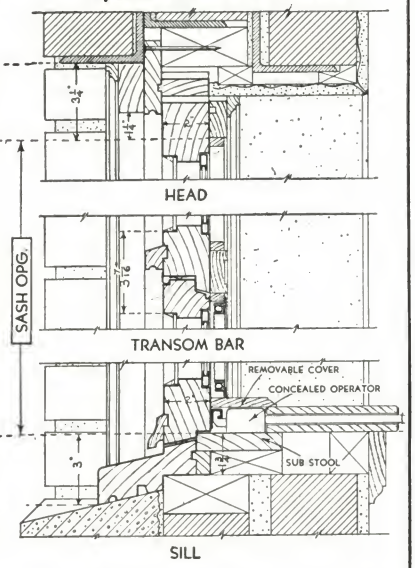
MASONRY WALLS

BRICK VENEER
Stationary Unit With Transom



Note absence of opening joints in stationary unit. This eliminates air leakage. Face measurements over all are same as on operative units. All transoms are stationary.

SOLID MASONRY
Operative Unit With Transom

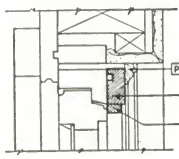


A rough 2x4 frame nailed to head, sides and sill of outer frame, should be applied for installations in solid masonry walls. This detail also shows transom head on operative unit.

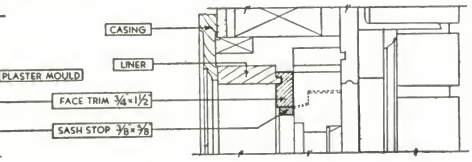
BRICK OPENING—Add 6½" in width and 6¼" in height to sash opening sizes. In group installations this is added to over all sash opening. See schedule of sizes 1⅛" x 2" brick mould is standard. If narrower or wider brick mould is used add or deduct accordingly

INTERIOR TRIM

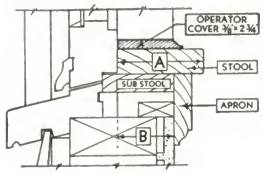
PLASTER RETURNS



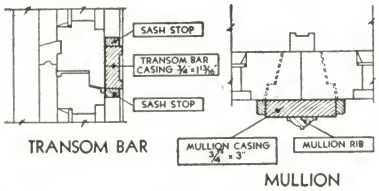
CASING TRIM



DETAILS SHOW HEAD JAMBS. TRIM AT SIDES IS THE SAME



SILL



TRANSOM BAR

MULLION

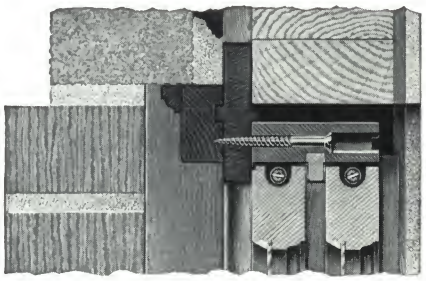
Regardless of wall construction and style of trim, the Face Trim, Sash Stops, Mull Casing, Transom Casing and Operator Cover (shown heavily cross hatched) cannot be changed in size or profile.

Regular casing and apron may be any design 2¾ in. or wider. Stool must be 1 1/16 in. thick on account of screen opening and operator. Sash lock requires ⅞ in. on face trim. Face trim is made with mortise and tenon joints.

Always specify if Plaster Returns or Casing Trim is to be used and give widths "A" and "B" or width of jambs.

"UNIPAK UNIQUE" DOUBLE HUNG WINDOWS

A Companion Product to "Unipak" Casements



Simplicity of Installation

Outer frame is shown in dark color. Inner unit with sash is shown in lighter color. "Unipak Unique" is installed more quickly and easily than any other window, before or after plastering. No fitting or assembling required, merely driving a few screws

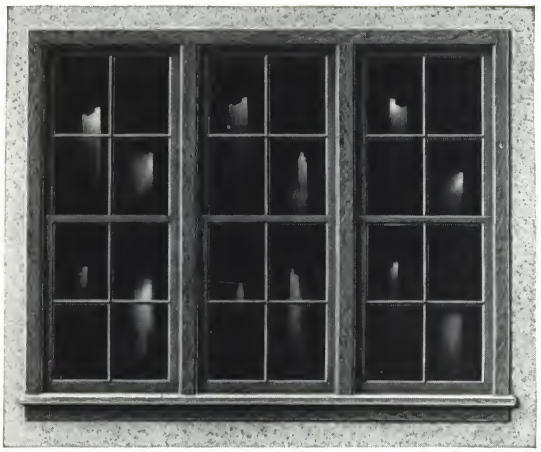
Description

"Unipak Unique" Double Hung Windows are complete units embodying the same basic principle of outer frame and inner unit construction as "Unipak" Wood Casements and may be used in conjunction with them. They are made in complete harmony, both having narrow casings and mullions, wide blind stops and overlapping sill, providing weathertight installation.

Outer Frame consists merely of the wide blind stops, outside casings and a portion of the sill. It is installed as the walls are erected.

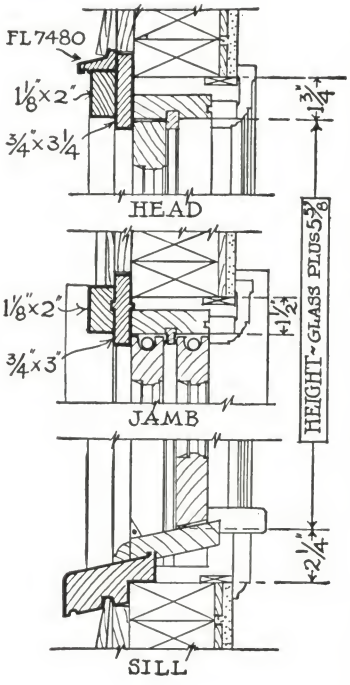
Inner Units consist of the pre-fitted window with its surrounding frame, completely assembled at factory. The sash are hung to "Unique" balances and all weatherstrip is applied. No fitting required. Holes for attaching screws are factory drilled and screws furnished.

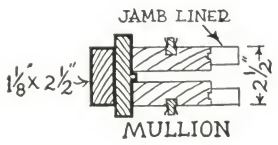
Frames and sash made of clear W.P. Pine, treated with toxic solution to resist decay, termites and water absorption. Sash glued with waterproof glue and pinned. Jambs are 1⅛ in. thick.



"Unipak Unique"

Provides a beautiful, weathertight, perfectly counter balanced installation with smooth, easy operation. There are no pulleys, weights or cord, weight boxes, pulley holes or pockets. Glass divided any way desired





Rough Openings

Width—add 7 in. to glass or 3 in. to sash opening.

Height—add 9⅝ in. to glass or 4 in. to sash opening. Note that "Unipak" sash openings in height are 5⅝ in. over glass instead of the customary 6 in.

Mullions

All mullions are 6½ in. between glass or 2½ in. between sash.

"Unique" Sash Balances

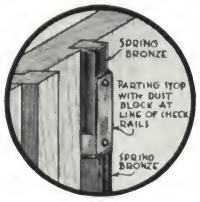
A simple yet highly efficient counterbalance, which employs for its action, the torsion spring principle. The spring is made of high grade, oil tempered spring steel, with a slotted fitting at the bottom through which slides a spiral lifting rod.

A true counterbalance, not merely a frictional sash holding device. Fully contained within runways of sash, requiring no pockets or special framing.

Painting will not affect its operation. Completely installed at factory.

Weatherstrip

Completely weatherstripped at sides, top, check rail and bottom with finest spring bronze weatherstrip, installed at factory. Sash can easily be removed when necessary without any injury to weatherstrip. Exclusive zinc dust block illustrated provides three-point contact at line of check rails and stops air leakage at these points.



Jamb Liners

(See detail of mullion.) All frames are furnished with standardized 1⅛-in. jambs, 4⅛ in. wide for 1⅜-in. windows. If walls require 5¼-in. jambs, 1⅜-in. jamb liners are supplied. Any width jamb is thus provided without change in standard frame. Liners are furnished with inside trim. Specify width of jamb-overall required.

Interior Trim

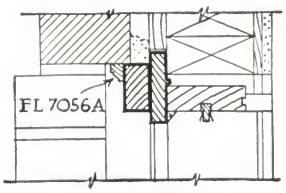
Any design of casing 2¾ in. or wider may be used. Mullion casings are 2½ in. wide.

Screens and Storm Sash

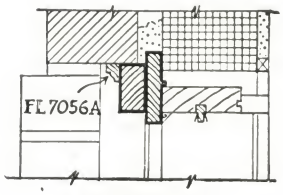
Standard 1⅛-in. screens and storm sash are used. These are supplied prefitted and rotproofed when so specified and ordered.

Details and Information

Details and descriptive folders will be sent promptly upon request. Address Dept. S-36.



Brick Veneer



Solid Masonry

An All Purpose Frame

An All Purpose Frame, the same basic detail for any type of wall—Siding, Shingles, Stucco, Brick Veneer or Solid Masonry. Adapted by using either drip FL-7480 or mould FL-7056A. Always specify type of wall. Made in all sizes with any division of glass.

HUTTIG MANUFACTURING CO.

Originators and Sole Manufacturers of the Red-E-Fit, Rot-proof Window

MUSCATINE, IOWA

Products

Originators and sole manufacturers of the RED-E-FIT ROT-PROOF WINDOW, INSULATED FRAMES, GENUINE WATERPROOF GLUED GUARANTEED VENEERED DOORS, CARTON PACKED STAIR and CABINET WORK and other (WOODWORK of MERIT).

The Company

Established in 1871, The HUTTIG MANUFACTURING Co. has continuously produced and marketed Woodwork products designed for lasting satisfaction commensurate with initial cost.

HUTTIG RED-E-FIT ROT-PROOF WINDOW

Chemically Treated Guaranteed for 25 Years Against Rot and Decay

RED-E-FIT ROT-PROOF WINDOW TRADE MARK

This improved wood window can be identified by this trade mark, which is electrically branded on the edge of each sash.

It is your mark of identification, and our pledge of its quality.

When glazed by us at the factory Libbey-Owens-Ford clear sheet glass is supplied.

Rot Proofed

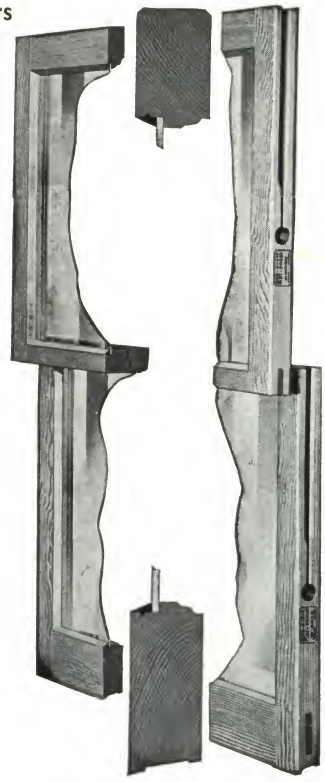
To overcome the danger of rot and decay Red-E-Fit Windows are chemically treated after machining but before assembly. This assures penetration of the Rot-Proof solution into the mortise and tenon joints particularly where top check rail meets top stile and where bottom rail and bottom stiles are joined.

Shaped for Sill

The entire bottom rail as well as the ends of the stile are shaped at the factory for the pitch of the sill, making the window all ready to install in any standard frame upon its delivery. See large center illustration.

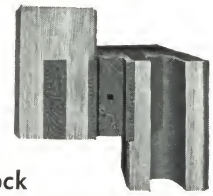
Ploughed and Bored

This window is made standard plough and bore for weight and cord installation.



Improved Rabbeted Check Rails

This improvement prevents drafts and dirt from penetrating in from the outside. The check rails are also cut out to fit over the parting stop as illustrated on the right.



Dove-Tailed Putty Lock

The putty rabbet in the Red-E-Fit Rot-Proof Window is made with a Dove-tailed Putty Lock consisting of a continuous groove run on an angle which provides a positive mechanical grip in the wood for the putty.

Saving in Installation

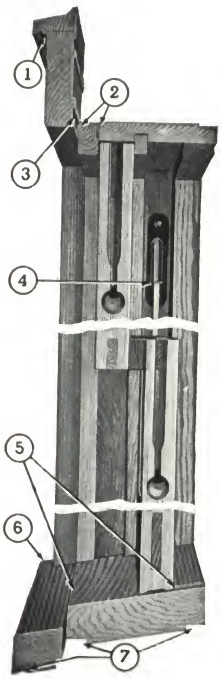
This window comes fitted for width, cut out at check rails and shaped at bottom for the slope of the sill. You can install it in any standard frame, thus eliminating the customary fitting on the job at a substantial saving in installation costs.

Architect's Specifications

Simply specify "Windows shall be Red-E-Fit Rot-Proof manufactured by HUTTIG of Muscatine."

Provide your clients with this 25 year guaranteed improved wood window.

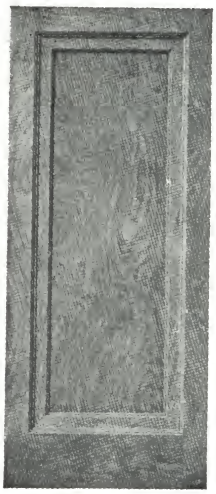
HUTTIG WINDOW FRAMES AND VENEERED DOORS



Window Frames

HUTTIG Window Frames are made from clear Ponderosa Pine with the joints aluminum primed providing special protection at corners.

1. This groove prevents water from running back under the head casing. The cap is slightly rabbeted to add to the weathertight construction.
2. Air leakage is minimized by these improved joints.
3. The outside casings are backed out and grooved to fit over the blind stop. This also automatically provides proper spacing for screen and storm sash.
4. When shipped with pulleys installed at our factory, we supply the DILLON JAMPROOF Pulley.
5. These shoulders on the sill provide tight joints for screen and storm sash and prevent rain from beating in under the sash and ruining the plaster inside.
6. Illustration shows the popular Huttig single sill type frame.
7. These grooves provide a water drip—a space for the sheathing and siding and a shoulder for inside lath or plaster board.



Duplex

Waterproof Glued Veneered Doors

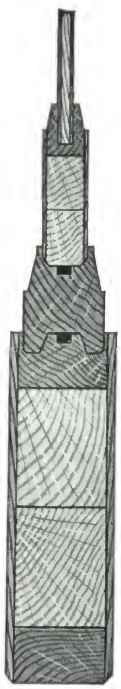
HUTTIG Doors are sound and well constructed — example — Duplex inner-frame type

1. Extra deep plow strengthens panel in insert frame.
2. Insert built up of Genuine Waterproof Glued Construction.
3. Solid mould—does away with loose parts and nail holes.
4. Metal splines securely hold all mitred joints in place.

Labelled and Guaranteed

By HUTTIG of Muscatine.

HUTTIG Doors are manufactured in Panelled Designs, Flush Doors, French Doors and other Modern Styles.



These and other products are illustrated and described in "Modern Masterpieces in Woodwork" a 16-page book available by writing Dept. S., Huttig Mfg. Co., Muscatine, Iowa.

N. S. W. COMPANY

Non-Stick Windows—No Sash Weights

2137 Gratiot Avenue
DETROIT, MICH.

THE N. S. W. WINDOW

Double hung wood windows are generally conceded to be the most universally adaptable, but the greatest faults have been poor operation and set design which must be used on inside trim and mullions. "Sticky" wood windows have caused numerous new types to make their appearance—however very few of the new types have made very much headway due to added construction costs and details of construction more complicated than the type they were to replace.

The so-called "sticky" wood window is due to paint, sash swell, weaving frame jambs and a wood to wood sliding contact. Weatherstrip helps out partially on the wood to wood contact but in many cases jamb weave offsets this gain by causing the weatherstrip to bind the sash.

Weatherstripping of practically every conceivable form was introduced to stop air leakage around the sash and to stop sash rattle due to loose fitting sash. However, this application did not affect the leakage around the frame and through mullions.

From this point on, frame manufacturers began to put considerable thought on the construction of weight pockets and mullion in an endeavor to eliminate leakage. However, very little had been done along with these changes to improve the operation of the sash so that they were comparable with the simple operation of various types of casement windows.

The N. S. W. window is a guaranteed non-stick, double-hung, wood window, without sash weights. It practically overcomes air filtration due to the tight fit of jamb and stud and the use of a metal jamb with weatherstrip beads.

The operation of these windows is smooth and easy. N. S. W. means non-stick window—no sticking—no binding—no noise or rumble of sash weights; quiet, almost effortless operation.

Each sash is balanced by a spring balance which is guaranteed for the life of the building and always holds the sash stationary anywhere desired.

The N. S. W. Non-stick Window

Woman's Hospital, Wyandotte, Mich.

State Hospital, Kalamazoo, Mich.

Balances

Spring balances are used in order to eliminate weight pockets and to allow the use of narrow mullions. The standard frame design calls for top pattern balances as they are easy to install or remove and allows a mullion as narrow as 1⅝ in. to be used.

Balances are installed in sizes according to the weight of the sash and range from three to one-hundred pounds per sash, using one or two balances as needed.

This type of balance has been on the market for about forty-five years and its operation is guaranteed for the life of the building. In the past paint has also caused trouble in the operation of balances as well as sash, but since there is no paint on the metal jamb this evil has been entirely eliminated.

Sash

The sash being used in these units are all machined to size and grooved to fit the metal jamb when they are manufactured. This eliminates a great portion of the ills caused by having to fit wet sash on the job and as a result have poor fitting sash when they dry back to normal.

The N. S. W. unit is the first wood window which permits the jobber and retailer to sell a complete unit installed to the builder or contractor. In some cases the

retailer has built up the complete units in his shop and when delivered on the job placed in the rough opening and the windows were complete. However, this can not be done very often so in most cases the frame is delivered and set as usual. Then when the job is ready for the windows, the metal and balances are taken out and set on the job. All the contractor is required to do is set the frame and when the N. S. W. representative is done with the window it is ready to trim.

This method results in a considerable saving and places the responsibility of operation in one place, thus eliminating the question of who is to blame—carpenter, painter, or weatherstrip man.

These units have been in operation since 1928 and have proven themselves without a doubt as both architects who have specified and contractors are repeating. The feeling of most contractors who have used them was aptly stated by one builder who said—"Cheap enough for the cheapest house I build and good enough for the best."

It was with these facts in mind that the N. S. W. (Non-Stick Window) window was designed and placed upon the market. The N. S. W. unit consists of a plain plank frame, a complete one-piece metal jamb including weatherstrip beads, sash balances and sash which are manufactured to fit the metal jamb.

Frame

The basis of the frame is a simple 2x4 buck. The jambs having no machine work except two dadoes for head and sill. The head is also 2x4 with slots machined in the end for balances. The outside trim can be varied to suit the various wall conditions, viz., frame, brick veneer and solid wall.

The inside of the jambs can also be grounded out to meet all conditions of wall construction and inside finish.

The material in the head and jambs need not be any better grade than framing lumber as they are completely covered when installation is finished.

In the case of frame and brick veneer buildings the 2x4 jamb acts as the cripple or short stud in doubling the studs around the opening. See Cuts—Fig. 1 and 2.

With this type of frame it is possible to design a frame for the various markets which will meet from four to six different applications, thus cutting down stocks and increasing stock turn over.

Metal Jambs

The jambs are of one-piece zinc rolled right and left hand to proper length with sill pitch so no cutting is necessary in the field.

The one-piece jamb is unique in that with the return edges together with the parting strip form a complete metal track for each sash the entire length of the opening.

It is this construction that results in non-stick operation as all wood and paint are removed from the track of the sash.

The head and sill metal provides weatherstrip beads and also return edges the same as the jambs. The fact that the return edges are carried out in all the sections results in nesting the sash in a complete metal track and provides paint margins between the upper sash and blind stop as well as between bottom sash and inside finish stop. This makes it practically impossible to seal the sash in the opening with paint which in the past has caused more trouble and expense than any other operation on new work.

Ease of Operation

We call attention to a feature of this window that is exclusive and which we feel sure will be recognized as an outstanding improvement. The sketches show cross section of the metal jambs or sash guides which are fixed to the wood acting as jambs by four screws—two each at head and sill. The metal is rustproof, satin finish, pure zinc, and provides parting stop, weatherstrip beads and inturned edges and extends from head to sill. The metal sash guide so formed is machine rolled perfectly straight and rigid as to the spaced relation of the corrugations and provides complete slide ways for the sash. The wood to metal contact between sash and jambs, perfect alignment of slide ways and the uniform milling of the sash to conform makes for close fitting with friction and sticking reduced to an absolute minimum. The metal is not painted, is rustproof and presents a very finished appearance. The inturned edges prevent the trim stop or the blind stop from binding the sash.

How N. S. W. Windows Affect the Contractor

(1) Allows contractor to purchase complete unit from one source.

(2) Reduces his labor costs as he only installs frame.

(3) Relieves him of responsibility of operation.

(4) Eliminates worry and expense of refitting and removing "paint sticks" after tenant moves in.

(5) Makes his wall insulation effective as there are no uninsulated gaps as in the case of weight pockets and mullions.

(6) Windows can be installed at any stage of building construction and still remain operative.

(7) Machining of sash to fit when made insures proper fit and a more uniform job.

(8) In solid wall construction a saving is effected in stone sill and steel lintels, as mullions are smaller and lintels do not have to span weight boxes but secure bearing directly behind 2x4 jambs.

(9) In frame or brick veneer construction, the 2x4 jambs act as the cripple studs—a saving of at least 50¢ per opening in material and labor.

(10) Results in better plaster job at openings as plasterer has solid base to work on.

(11) Results in small saving in painting, estimated at 20c per opening as jambs do not have to be painted or oiled.

(12) 2x4 frame is more rigid—setting is easier and more apt to be square.

(13) Square frame saves time in applying trim, especially mitered joints.

(14) Trim carpenter does not have to gauge inside stops. They are gauged by metal flange of jamb.

(15) Major selling point—Salesman can demonstrate operation of windows instead of making excuses for non-operation as in case of present wood window.

N. S. W. Windows Give the Architect Freedom in Design

(a) Narrow mullions.

(b) Ability to increase glass area but still have necessary wall support.

(c) Outside and inside trim details may be treated in many different ways.

(d) Ability to design building and apply wood windows—not to design building around windows.

Advantages to the Property Owner

(1) Stronger construction.

(2) Stoppage of air leaks through pockets, mullions and under trim as well as weatherstrip job.

(3) Ease of operation at all times—pinch bars, automobile jacks, blocks and hammers not required.

(4) Ventilation of building under control—reduction of heating costs.

(5) More light area with same wall space or more wall space and same light area as now used.

(6) Narrow mullions make window easier to dress and eliminate "blind spot" caused by 6 or 7-in. mullion trim.

(7) Knowledge that wood sash have proved themselves through years of use.

(8) No danger of discoloration of outside paint or brick wall.

(9) Warm and friendly appearance.

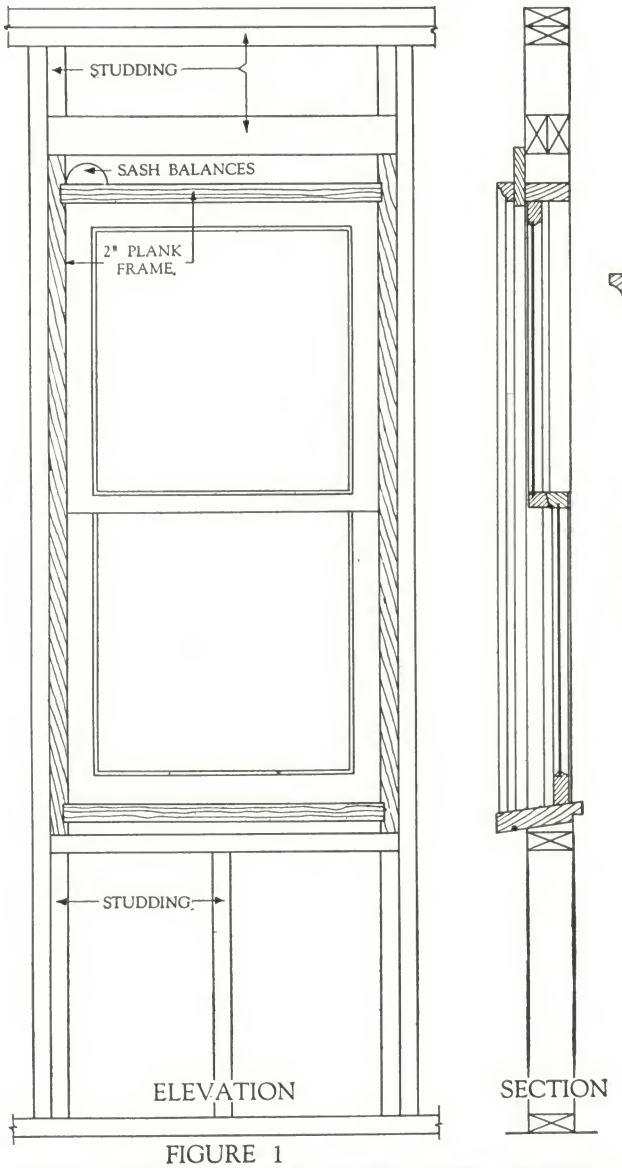


FIGURE 1

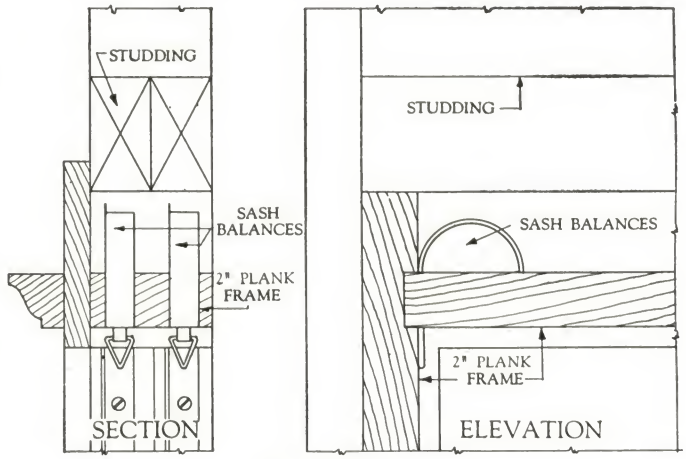
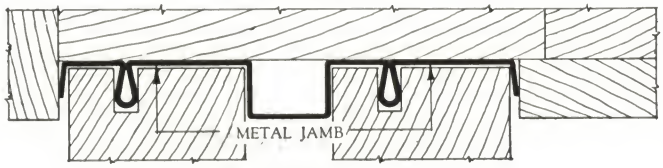
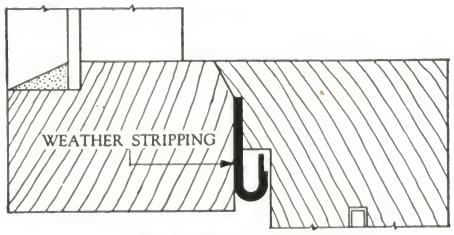


FIGURE 2



JAMB



MEETING RAILS

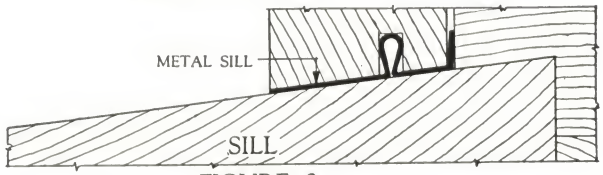


FIGURE 3

DETAILS OF N. S. W. WINDOW CONSTRUCTION

Fig. 1

Indicating the construction of the N. S. W. window frame. In either frame brick veneer or solid masonry buildings the jamb and sill construction of the N. S. W. window are identical. Note that 2-in. material is used and that jamb members are structural with weight pockets eliminated. Lugs at head of side jambs provide bearing for "header," allowing clearance for spring sash balance as shown. This compact construction is efficient and economical.

Fig. 2

Here is a "closeup" of patented spring sash balance as mortised in the head jamb of the N. S. W. window—one balance to each sash. A metal tape with hook for fixing same to sash is shown projecting from the balance. The spring balance is a proven means of aiding the operation of sliding sash—guaranteed in the N. S. W. window for the life of the building.

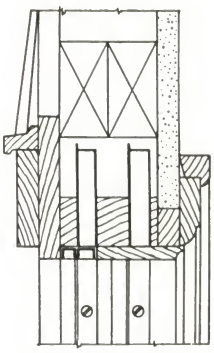
Fig. 3

Showing cross sections of metal weatherstripping and sash guides that are featured in the N. S. W. window exclusively.

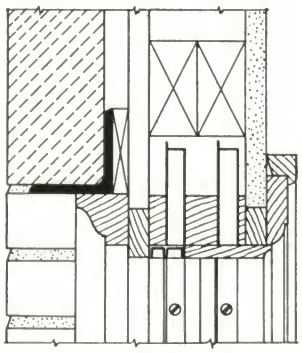
Note that the sash guides D and D, are machine rolled and completely cover the side jambs of frame from head to sill. Being rigid and perfect in alignment, they provide ideal "slideways" for operation of sash.

Sash are accurately milled to conform to these uniform slideways and as a result of precision afforded and the wood-to-metal contact between sash and frame, friction is reduced to an absolute minimum.

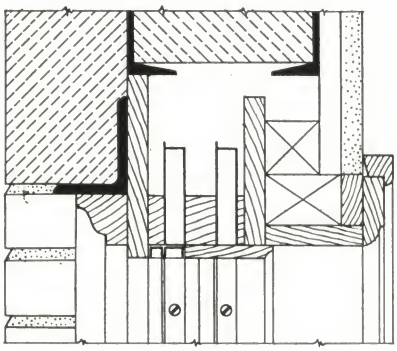
Note the inturned edges of sash guides and head and sill weatherstrip members to prevent binding of sash by trim or blind stops.



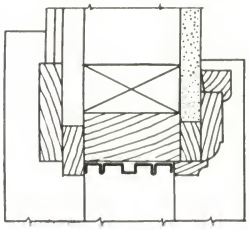
HEAD



HEAD



HEAD



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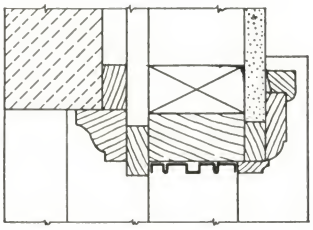

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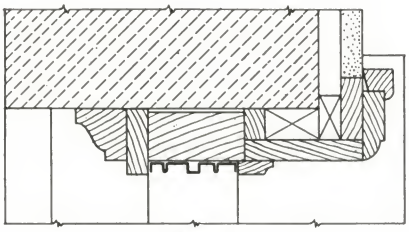

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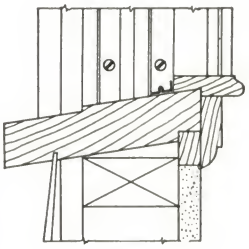
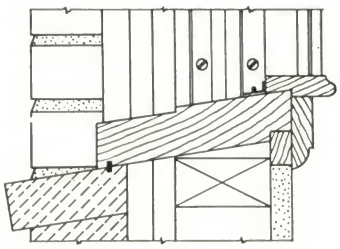


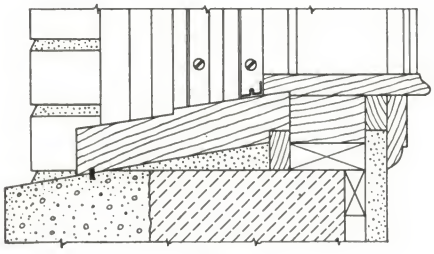
SILL

FRAME
CONSTRUCTION



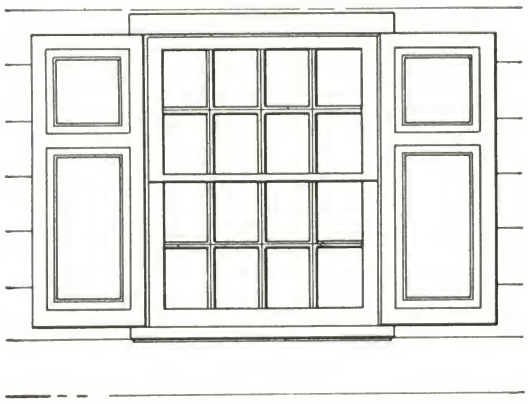
SILL

BRICK VENEER
CONSTRUCTION



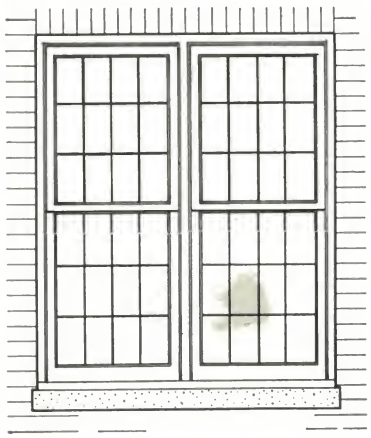
SILL

SOLID MASONRY
CONSTRUCTION



SINGLE WINDOW

IN PROPORTION OF 36 × 24
2 LIGHTS CUT 4 OVER 2,
TOP AND BOTTOM,
TRUE COLONIAL



MULLION WINDOW

IN PROPORTION OF 20 × 26
2 LIGHTS GLAZED IN HARD METAL
NOTE NARROW MULLIONS

DETAILS OF N. S. W. WINDOW CONSTRUCTION

WHITE PINE SASH COMPANY

Window and Door Frames and Full Vision Automatic Awning Type Windows; Normandy and Saxon Casements

SPOKANE, WASH. MISSOULA, MONT.

DISTRIBUTING WAREHOUSES: NEW YORK, N. Y. and CHICAGO, ILL.

JOBBERS IN PRINCIPAL CITIES

PINE CRAFT WEATHER-PROOF FRAMES

Pine Craft Weather-Proof Frames are a product of the WHITE PINE SASH COMPANY, pioneers in the quantity production of stock window and door frames. The weather-proof features of Pine Craft frames are the result of more than twenty years' experience, gained in the manufacture of millions of frames. These features are seemingly simple, but none-the-less efficient. The parts of the frame where air leakage generally occurs are united by wedge-shaped tongues and grooves, which are so accurately milled that the resulting juncture approximates the solid wood itself.

Pine Craft Weather-Proof Frames are made in a variety of styles and sizes for all manner of construction and to suit the peculiar needs of the territory where used. Pine Craft jobbers carry the proper frames for the locality they serve. A few typical examples of stock frames are shown in the following pages. The complete Pine Craft Frame Catalog, showing all stock patterns, will be mailed on request. In addition to stock frames, we are equipped to manufacture frames to architects' details where special treatment of the window openings is desired.

Materials Used

Ponderosa Pine (Pinus Ponderosa) and Idaho White Pine (Pinus Monticola) are used in the manufacture of Pine Craft frames, these woods being distinguished for their weather-resisting and paint-holding qualities, and abundant supply. They are extremely workable, which permits smooth and accurate machining to pattern on high speed machines. Either species will give entire satisfaction when properly installed and regularly painted. Idaho White Pine, in particular, is noted for its resistance to decay and ability to withstand neglect.

Oak door sills are made from carefully selected oak sill stock, thoroughly air-dried. The sawn ends are primed with linseed oil to prevent checking.

Construction Details

Sash opening sizes vary in different parts of the country (see "Window Opening Sizes" below). Pine Craft frames are made the proper opening size for the locality where sold. The standard width of sash run is $1\frac{13}{32}$ in. for 1⅜-in. sash, and $1\frac{25}{32}$ in. for 1¾-in. sash. Window frame sills are pitched 2¼ in. to 1 ft., providing perfect drainage. Door sills are pitched 1¼ in. to 1 ft.

Pulleys

Pine Craft frames are fitted with Dillon Jam-proof pulleys or Grand Rapids pulley No. 18, both with everlasting bronze bearings, and both can be furnished in either lacquer or galvanized finish. Pulleys with special face plates can be furnished where required.

Grades

Pine Craft frames are furnished in two grades. "Clear" grade frames have all exposed faces clear. "No. 1" grade frames may have pulley stiles and sills containing sound knots. Other parts are practically the same as furnished in Clear grade frames. All frame bundles are marked as to grade.

Window Opening Sizes

Note: These figures give outside dimension of stock windows, not rough opening.

		Add to glass size	
		Width	Height
Boston area	Boston openings	3⅝-in.	5-in.
New York and northern New Jersey	New York openings	4 -in.	6-in.
Eastern Pennsylvania and southern New Jersey	Philadelphia openings	4⅝-in.	6¼ or 6⅜-in.
Western Pennsylvania and Ohio	Ohio openings	4½-in.	6 or 6⅛-in.
Michigan, Illinois and West, 2-Lt. windows	Western openings	4 -in.	6-in.
Indianapolis market openings		5 -in.	6½-in.
Baltimore and Washington, D. C., market openings		4½-in.	6¼-in.

PINE CRAFT 25-YEAR GUARANTEED SASH AND FRAMES

Realizing that a rot-proof and termite-proof treatment for wood sash and wood frames is both desirable and necessary and recognizing that the manufacturer should assume full responsibility for insuring the architect and owner against these prevalent causes of destruction, the WHITE PINE SASH COMPANY is now in position to furnish impregnated sash and frames backed by a written Twenty-five Year Guarantee against deterioration from rot or termites.

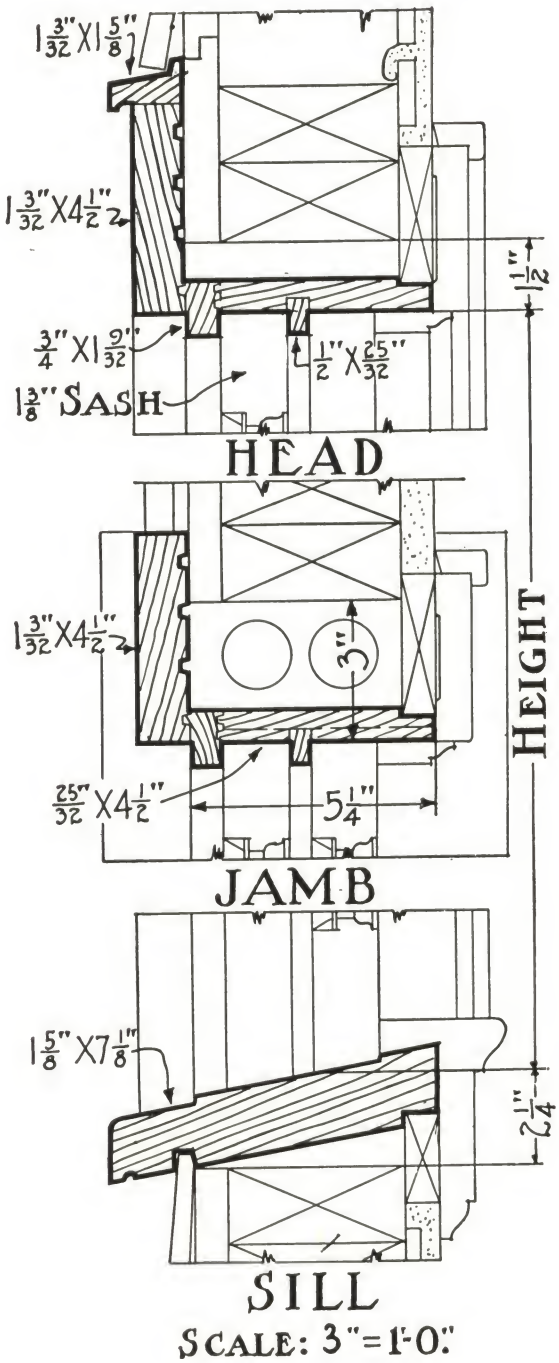
The treatment is composed of (1) toxic salts, which prevent the growth of rot fungus and protect the wood against termites; (2) a liquid vehicle which carries the salts into the wood; and (3) paint oil, which seals the pores of the wood, preventing absorption of moisture and leaching of the toxic salts.

Twenty-five Year Guarantee

We guarantee against failure from rot or insect attack for a period of twenty-five years, any sash or frame protected by the Pine Craft PRIM-A-TOX treatment, where installation has been duly certified by architect, builder or jobber. We agree to replace without charge any sash or frame thus guaranteed if rendered unfit from these causes within twenty-five years.

Typical Frame House Window Frame

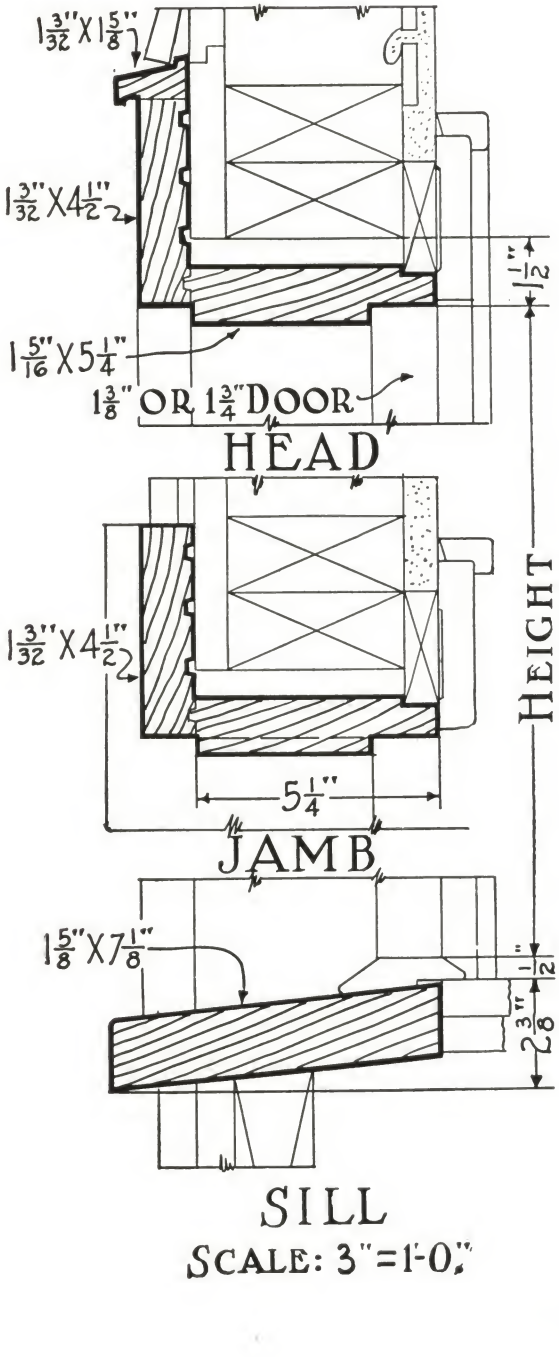
FRAME NO. 711.



SCALE: 3"=1'-0"

Typical Frame House Door Frame

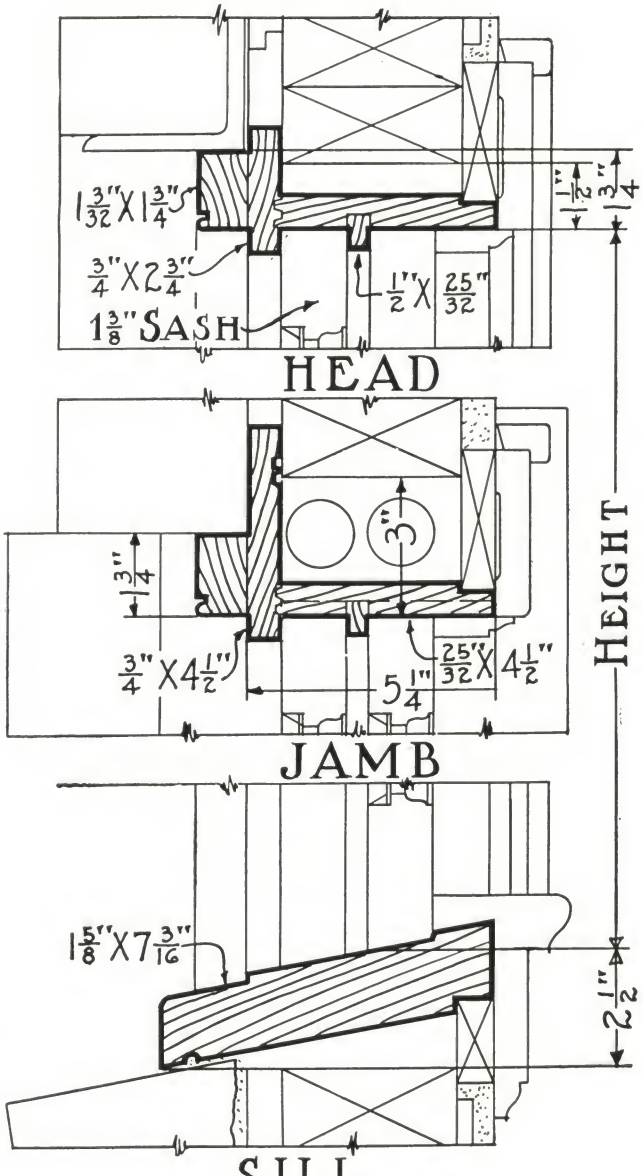
FRAME NO. 750.



SCALE: 3"=1'-0"

Typical Brick Veneer Window Frame

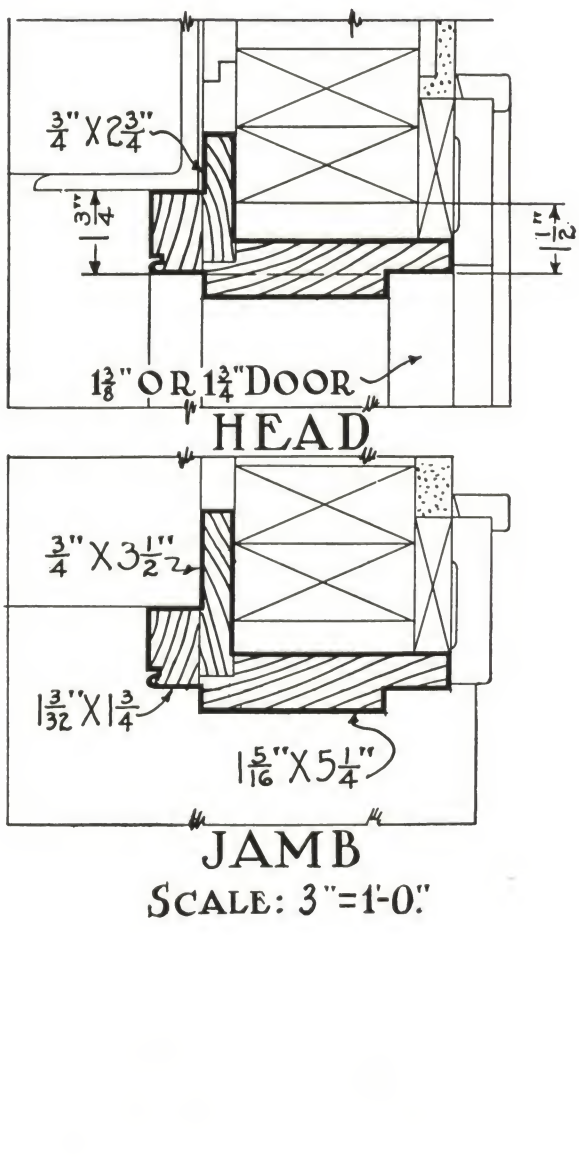
FRAME NO. 725.



SCALE: 3"=1'-0"

Typical Brick Veneer Door Frame

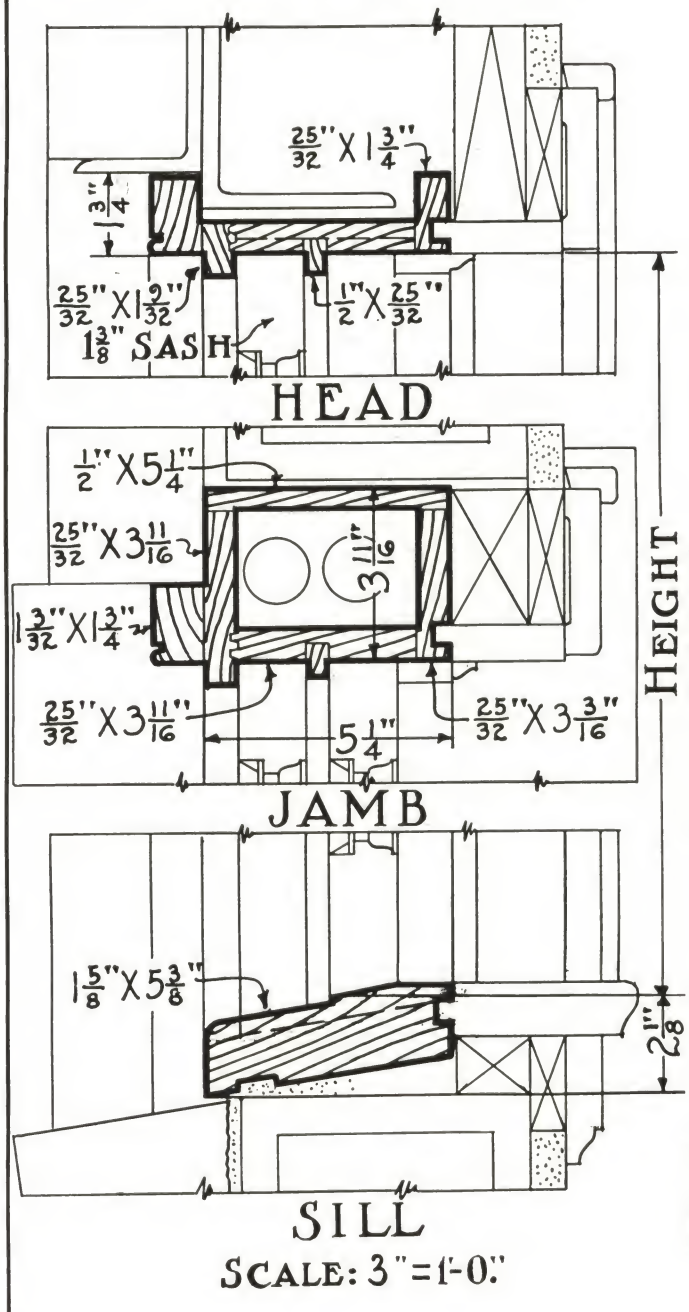
FRAME NO. 761.



SCALE: 3"=1'-0"

Typical Brick Wall or "Box" Frame for Residences

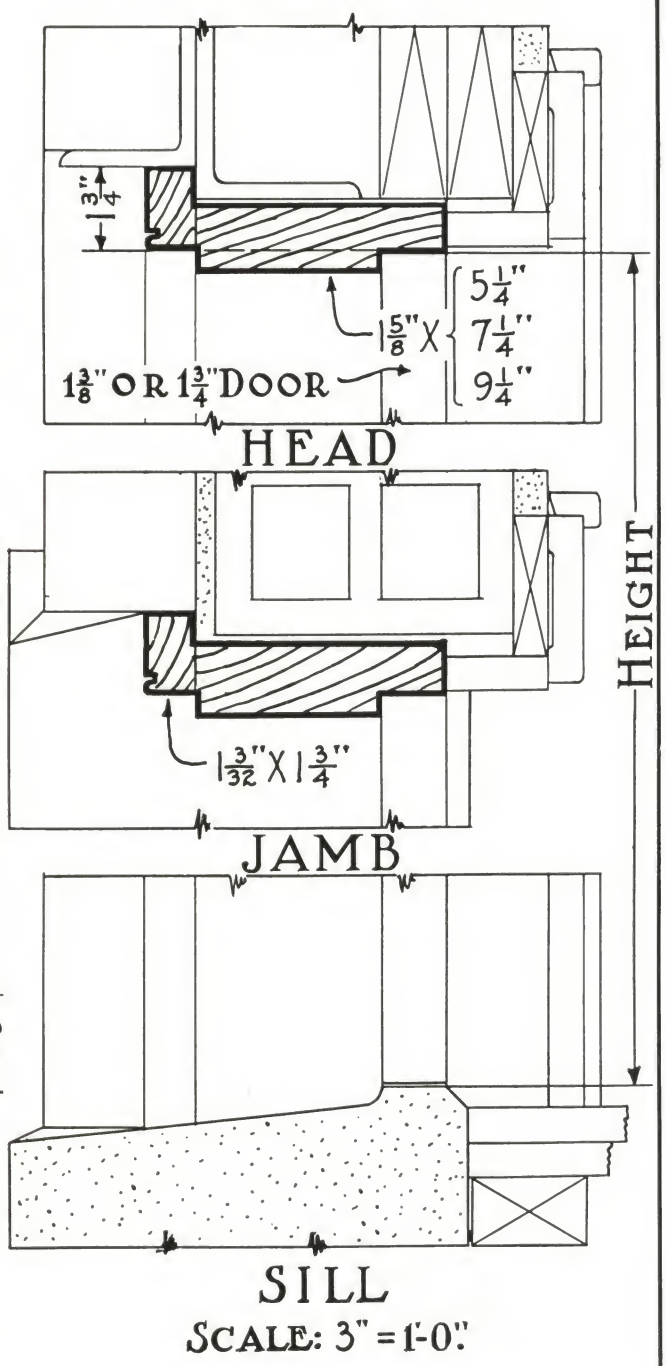
FRAME NO. 730.



SCALE: 3" = 1'-0"

Typical Brick Wall Door Frame for Residences

FRAME NO. 765.



SCALE: 3" = 1'-0"

NORMANDY CASEMENTS

For Residences, Apartments, etc.

Pine Craft Normandy Casements offer many exclusive features, such as

No underscreen operators
No hinges on outside
No mullions in multiple units
No sliding hardware
Sash and screen cleaned from inside

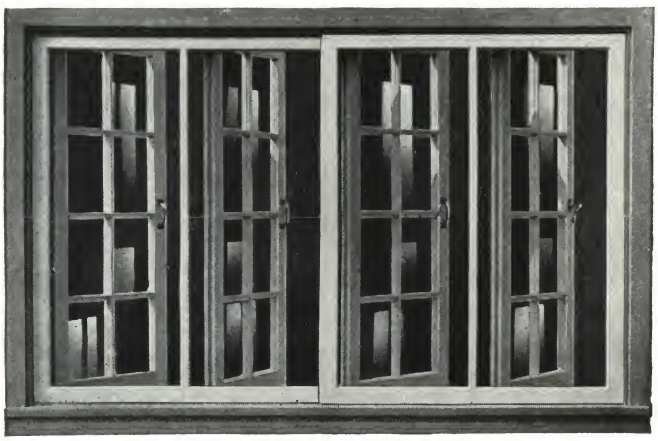
Inside screens open and close the sash. Sash and screen both swing out without interfering with curtains and are cleaned from inside the building without detaching.

Complete Units—Normandy Casements are sold as completely assembled units, including frame, sash, (glazed or unglazed), operating hardware and wood frame screens. Metal frame screens which can be quickly replaced with metal frame storm sash, are optional.

No Mullions—Type A multiple units have bumper bars between screens. Each sash individually controlled. No mullion shows on outside. Type B multiple units have no bumper bars or mullions. Locking the extreme right or left-hand sash also locks all others. Sliding screens are used on this type. On Type B multiple units all sash must swing same way.

Advantages—The advantages offered by Normandy Casements are many and definite. The sash are factory fitted with proper clearances to prevent binding or sticking in any weather. These clearances are controlled and made weathertight by fine quality spring bronze weatherstrip, applied at the factory. This strip compensates for any shrinkage or swelling of the sash.

The motivating force is applied directly to the center of the sash stile, instead of to the bottom rail as with underscreen operated sash. Thus there is no tendency to warp or distort the sash when opening or closing. The sash are held firmly in place in any position and will not rattle.



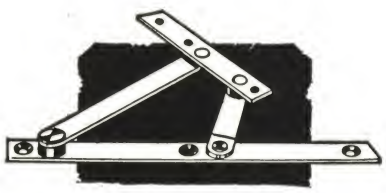
Type B—Multiple Unit

It has inside sliding screens. These may be quickly removed by raising them a short distance and pulling inward. There are no mullions

Type A—One Hand Operation

Both sides cleaned from inside.

Turn the locking handle on the screen. Push out screen until sash reaches desired position. Depress thumblatch and close screen. Reconnection of latch is automatic. The sash stays put. All accomplished with one hand



Rustproof Sash and Screen Adjuster

All motion confined to four self-adjusting brass pivots

Sash and Screen Adjusters

These sash and screen adjusters have been used since 1927. They are specified by Federal and State departments, and also by prominent architects on private homes, apartment houses, etc. Locking handles are solid bronze or brass, in standard finishes.

Wide Range of Sizes

Normandy Casements are made in a wider range of stock sizes than any similar windows. By the use of multiple units almost any desired width can be obtained and there are five sizes of stock heights. Larger units can also be furnished where required, up to three feet wide by seven feet high. Stock sizes are listed below.

Stock Sizes

Sash Widths—1 ft. 4 in., 1 ft. 8 in., 2 lights wide; 2 ft. 0 in., 2 ft. 4 in., 3 lights wide.

Sash Heights—3 ft. 0 in., 3 ft. 6 in., 3 lights high; 4 ft. 0 in., 4 ft. 6 in., 5 ft., 4 lights high.

Awning Type Windows

Awning type windows for residences or apartments offer new possibilities to architects. Furnished one, two or three-sash high. Our Normandy type hardware permits inside screens. Installation and operation are the same as for casements. One or more units may be left unscreened if desired.

Roller Screens may be used with Normandy Casements.

SAXON CASEMENTS

For Residences, Apartments, etc.

Pine Craft Saxon Casements are furnished with removable screens and with or without underscreen operators. They are sold as complete units, including weatherstripped frames, sash (glazed or unglazed) and inside screens. Screens are quickly removable and may be replaced with storm sash where required.

Rustproof adjusters hold the sash firmly in place. Both sides of sash are readily cleaned from inside. Hardware is solid bronze or brass, in standard finishes.

When furnished without underscreen operator, the screens are hung at the top and may be swung out at the bottom when opening or closing the sash; or may be lifted off the hangers for interchanging with storm sash, or for painting and cleaning purposes. This arrangement, of course, lacks the convenience of our other casements, but offers a satisfactory and practical window for low cost projects.

Stock Sizes

Sash Widths—1 ft. 4 in. and 1 ft. 8 in. (Sash 2 lights wide); 2 ft. 0 in. and 2 ft. 4 in. (Sash 3 lights wide).

Sash Heights—3 ft. 0 in. and 3 ft. 6 in. (Sash 3 lights high); 4 ft. 0 in., 4 ft. 6 in. and 5 ft. (Sash 4 lights high).

DALMO-PINE CRAFT AUTOMATIC MULTIPLE-OPERATING WINDOW

Full-vision Awning-type Window for Schools, Hospitals, etc.

These windows permit daylight illumination without glare, and natural ventilation without drafts. May be furnished one-, two- or three-sash high, all sash being automatically controlled by operation of the bottom sash. Opened to a predetermined position, the bottom sash automatically disconnects for independent operation, leaving the upper vents in fixed open position.

Re-connection of the lower sash is also automatic, requiring only that it be opened to the position occupied by the upper vents. As there are no side clutches or locks, the entire operation is accomplished with one hand. Window poles are eliminated.

Sawyer Design windows have the bottom sash opening down and in, the top sash opening up and out, in unison. The center sash can then be manually adjusted to any desired position. This arrangement deflects air currents toward the ceiling and permits maximum ventilation.

These windows are furnished as complete units, comprising frame, sash and operating hardware. Factory assembled, they are ready for installation and glazing. Half-size drawings will be furnished on request. Automatic type illustrated.

MEMORANDA

LUMBER AND SPECIAL WOOD WORK

- SECTION -

12

CATALOGS *1 to 21*

MEMORANDA

AMERICAN LUMBER & TREATING CO.

Wolman Salts
A Universal Wood Preservative

GENERAL OFFICES
37 West Van Buren Street, CHICAGO, ILL.

ST. LOUIS OFFICE
Arcade Building

LOS ANGELES OFFICE
1031 So. Broadway

SHREVEPORT OFFICE
509 Market Street

NEW YORK OFFICE
25 Broadway

SAN FRANCISCO OFFICE
Rialto Building

Products

GENUINE WOLMAN SALTS, a clean, odorless and paintable Wood Preservative and Fire Retardant. Have as high toxicity as that of any wood preservative in commercial use, have no corrosive effect on metal fastenings, and do not leach or exude after treatment.

WOLMANIZED LUMBER and TIMBER (any species of lumber, poles, posts, or forest products treated under vacuum and pressure with Wolman Salts and by the Wolman Process).

What is Wolmanizing?

Wolmanizing is a process of preserving any kind of wood so as to give it a high degree of protection against decay and insect attack—also making it fire retardant.

Contractors may secure Wolmanized lumber and other forest products, or have their own purchases treated at any of a large number of commercial pressure treating plants strategically located all over the United States, so as to serve any locality.

At each of these conveniently located points the material is treated by the full cell process in a closed retort under vacuum and pressure which insures a deep and dependable penetration of the preservative into all treatable areas of the wood.

A double-check analysis and technical inspection is maintained in both the manufacture of the Wolman Salts and in the Wolmanizing treatment.

General Commercial Usages

Some of the uses include roofing, flooring, sub-flooring, platforms, bridge timbers, planking, ties, fencing, dock superstructures, board walks, telegraph and transmission line poles, car lumber, lining of ice houses, or wherever conditions invite decay or termite attack.

Wood treated with Wolman Salts may be painted or stained after treatment. The cost of treatment is no higher than other preservative treatments, and often less.

Wolman Salts have a splendid 28-year record of service on a large scale in Central Europe.

Many million feet of Wolmanized lumber have been installed in the United States and Central America upon specifications of prominent architects and engineers.

Left

Facsimile of Brand Certifying to Correct Treatment and Dependable Protection Which Will Identify Wolmanized Products

List of users furnished on request

Service Records

A recently completed survey and inspection of the principal installations in the United States and in Central America, made by the *Pittsburgh Testing Laboratory*, provides the following conclusion from the detailed technical report on Wolmanized Wood:

"Wolman Salts, when properly used as a wood preservative treatment, will protect wood so treated by preventing or inhibiting decay.

This conclusion is based on the following:

(a) The reliably reported successful use of Wolman Salts in Europe.

(b) The fact that no traces of decay were found in the installations examined by us in the United States. These included installations up to eight years of age.

(c) The fact that decay of Wolmanized wood examined by us in the tropics has been almost negligible, installations up to nine years of age being examined.

(d) The finding of Wolman Salts in the heart as well as outer sections of specimens of Wolmanized wood that had been in service for various lengths of time up to nine years.

Attack by Termites

Wolman Salts (Tanalith) when properly used as a wood preservative treatment will protect wood so treated by preventing or prohibiting the attack by termites. This conclusion is based on the following:

(a) The fact that no evidence of termite attack upon Wolmanized wood was found in the installations examined by us in the United States.

(b) The fact that we failed to find or learn of a single case of termite attack upon Wolmanized wood in the survey in Central America, of the Standard Fruit & Steamship Company's properties. This Company has used 35,000,000 feet of Wolmanized Lumber there during the last nine years.

(c) The finding of Wolman Salts by chemical analysis in all parts of specimens of Wolmanized wood taken after exposure to severe conditions in the tropics for various lengths of time up to nine years.

Respectfully submitted,
PITTSBURGH TESTING LABORATORY,
B. H. Witherspoon, President."

Specifications

All the lumber or timber specified to be Wolmanized, shall be given a pressure treatment of High Fixation Wolman Salts, the treating procedure to be in accordance with the published standard methods of the AMERICAN LUMBER & TREATING CO., and subject to the inspection of the Pittsburgh Testing Laboratory; the *lumber to be branded with the Pittsburgh Testing Laboratory certification as to treatment.*

The amount of Wolman Salts solution injected into the lumber or timber and its strength of concentration shall be so controlled as to leave not less than (*) pounds of dry salt for each cubic foot of material treated, and this shall permeate all of the sapwood and as much of the heart wood as practicable. No charge shall contain less than 90% nor more than 110% of the quantity of preservative specified.

*Insert the desired final retention of dry salt content which may vary from ⅛ pound (mine timbers) to ¼ pound (indoor building construction) or for ties, poles and outside construction ⅜ pound of Wolman Salts for each cubic foot of the wood treated.

Note: After treatment lumber is to be properly piled and allowed to dry before using, to insure against excessive shrinkage after being put into service.

When the lumber is to be painted it is imperative that the wood be dry before applying paint.

Wolmanized Lumber in Yards

Many retail yards carry Wolmanized lumber in stock. If not available from your local dealer, write us for further information on prices on the treated lumber or on treatment only.

Wolman Salts booklet gives you detailed information, fully illustrated. Write for copy today.

THE GRASSELLI CHEMICAL COMPANY, INC.

CLEVELAND, OHIO

NEW YORK AND EXPORT OFFICE: 350 Fifth Avenue

BRANCHES AND WAREHOUSES

ALBANY BIRMINGHAM BOSTON CHARLOTTE CHICAGO CINCINNATI DETROIT MILWAUKEE NEW HAVEN NEW ORLEANS PHILADELPHIA PITTSBURGH ST. LOUIS ST. PAUL

SAN FRANCISCO, 584 Mission Street LOS ANGELES, 2260 East 15th Street

REPRESENTED IN CANADA BY CANADIAN INDUSTRIES, LTD., General Chemicals Division—MONTREAL AND TORONTO

CHROMATED ZINC CHLORIDE, AN IMPROVED WOOD PRESERVATIVE

Chemical wood preservation circumvents an industry built upon basic established facts. From embryonic theories to highly developed practice conservative recognition of actual accomplishment has marked its progress.

The measure of the economic value of a wood preservative is the length of service period over which wood treated with the preservative will retain sufficient toxicity to prevent decay by wood destroying fungi. From this it follows that the essential requisites of a good preservative are:

(1) High initial toxicity to wood destroying fungi.
(2) Physical permanence of preservative in the wood.
(3) Retention of toxicity by the preserving material.

Two of 44 Officers' Residences Erected at Barksdale Field, Shreveport, La.
All structural wood Zinc Chloride treated

These three properties are of necessity inter-related and one or two alone cannot establish value of a material as a wood preservative.

It has also been established and is generally accepted, that any effective wood preservative has an appreciable water solubility. Hence it follows that any preservative having value will leach. It is undoubtedly true that some commodities used as wood preservatives, either single chemicals or mixtures, react with themselves or with components of the wood to form compounds having greater resistance to dissolution by water. In any case, the value of a preservative is not determined by the amount of residual chemical left in the wood after exposure to the elements, but by the toxicity of the compounds left in the wood.

Zinc Chloride Treated Lumber in Roof of Railway Shop

Chromated Zinc Chloride is an improved form of wood preservers' grade Commercial Zinc Chloride. The treatment of wood with Grasselli Chromated Zinc Chloride consists of a standard Zinc Chloride treatment of definite established value, augmented with Sodium Bi-Chromate, similarly of known value.

Chromated Zinc Chloride provides protection against decay and termite attack, contributes fire repellence to the treated wood and leaves it in a paintable condition. It is free from arsenicals and toxic, volatile, organic chemicals harmful to the human system and, consequently may be safely used where human habitation or contact with foodstuffs is involved. Standard specifications and methods of recommended practice adopted by the American Wood Preservers' Association for Commercial Zinc Chloride govern the use of improved Chromated Zinc Chloride. All commercial treating plants equipped to render vacuum-pressure impregnation are qualified to meet these specifications.

Attributes of Chromated Zinc Chloride

Lumber and timber impregnated with ¾ lb. of Chromated Zinc Chloride (dry salt basis) per cubic foot will render indefinite service against all forms of decay resulting from the propagation of rot producing fungi and termite attack. Publications by the Forest Products Laboratory prove Zinc Chloride salts excellent fire repellent mediums comparing favorably with ammonium phosphate. Heavier retentions are recommended where fire retardance is the principal objective; however, a conventional preservative treatment of ¾ lb. per cubic foot will leave the wood in a condition difficult to ignite. Lumber treated with Chromated Zinc Chloride assumes a slight distinguishing cast but its presence does not interfere with the painting, staining or varnishing or in fact, any subsequent finishing of the treated wood. Chromated Zinc Chloride is odorless and free from any constituents imposing health hazards to those exposed to it. Lumber treated with Chromated Zinc Chloride and subsequently dried is not corrosive to metal fastenings (hardware, nails, screws, etc.). In the fabrication of lumber treated with Chromated Zinc Chloride, there is no corrosive effect upon the woodworking tools, nor does it cause any significant reduction in the strength of glued joints using commercial adhesives, such as casein, starch or animal glue.

A Close View of Loading Dock at Freeport, Tex.
Zinc Chloride treated timbers show no trace of decay after 12 years' service

Termite Repellence

Service tests under the jurisdiction of the Bureau of Entomology of the Department of Agriculture which are now in progress in the Tropics prove Zinc Chloride a remarkable termite repellent medium. Despite 10 years' exposure in an area where untreated wood is completely destroyed within a year, no sign of attack is evident. The Department of Agriculture limit their salt treatment recommendations to this reagent where termite control is involved.

A Section of a Mile Long Boardwalk Leading to Bathhouse with Painted Zinc Chloride Treated Timber

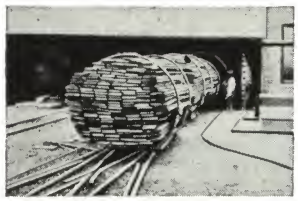
Commercial Uses for Chromated Zinc Chloride

Chromated Zinc Chloride can be used to advantage for every application for which Zinc Chloride or other salt treated wood is now used. For residential construction it is useful for sills, joists, floors, porch material and other areas subject to premature decay. Industrial uses include mill roofs, general construction beams, etc. Railroad uses include cross ties, switch ties, car and depot lumber, vegetable storage buildings, signs, posts, etc. For mines it is suited for both above and below ground exposures, including main haulage way ties, cribbing, lagging, shaft timbers, air course timbers, frame timbers, tipples, etc. For highway purposes its uses include bridge decking and superstructures, guard rails and guard rail posts, signs, etc. Many miscellaneous uses are also found including billboards, fences, stadium seats, boardwalks, farm buildings, dock superstructures, recreational structures, etc.

STANDARD SPECIFICATIONS FOR THE PRESERVATIVE TREATMENT OF TIMBER AND LUMBER BY PRESSURE PROCESSES WITH CHROMATED ZINC CHLORIDE

Conditioning—Timber shall be conditioned for treatment in accordance with American Wood Preservers' Association "Standards for the Purchase and Preservation of Treatable Timber."

Seasoning—(a) Timber shall be seasoned by air or steam as agreed upon, until in the judgment of the purchaser's representative any moisture in the wood will not prevent the injection and proper distribution of the specified amount of preservative.



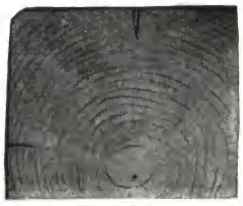
Treated Lumber Leaving Zinc Chloride Retort

(b) When, in the judgment of the purchaser's representative, steam-seasoning is necessary for adequate treatment, timbers may be steamed in the cylinder at not more than 30 lbs. pressure per square inch for not more than 20 hours at not more than 274°F., which pressure and temperature maxima shall not be reached in less than two hours. The cylinder shall be provided with vents to relieve it of air and insure proper circulation of steam. After steaming is completed a minimum vacuum of 22 in. shall be maintained for not less than 15 minutes. The cylinder shall be relieved continuously or frequently enough to prevent condensate from accumulating in sufficient quantity to reach the wood. Before the preservative is introduced the cylinder shall be drained of condensate.

Preparation for Treatment—Any charge of timber shall be confined to one kind or designated group or kinds of wood, of pieces approximately equal in size and moisture and sapwood content, into which approximately equal quantities of preservative can be injected, on which all necessary framing, boring, or chambering shall have been done, where possible, and so separated as to insure contact of preservative, and steam if used, with all surfaces.

Manner of Treatment—The ranges of pressure, temperature, and time duration shall be controlled so as to result in maximum penetration by the quantity of preservative injected, which shall permeate all of the sapwood, and as much of the heartwood as practicable. The vacuum requirements stipulated are those at sea-level, and necessary corrections shall be made for altitude.

Retention of Preservative—No charge shall contain less than 90%, nor more than 110%, of the quantity of preservative that may be specified; but the average retention of preservative by the material treated under any contract or orders shall be at least 100% of the quantity specified. The amount of preservative retained shall be calculated on the basis of preservative at 100°F., from reading of working-tank gauges or scales, or from weights before and after treatment of loaded trams on suitable track scales, checked as may be desired by the purchaser's representative.



Before Spraying

After Spraying

Cross Sections of Zinc Chloride Treated Pine Mine Ties Before and After Color Test for Penetration

Determination of Penetration—Penetration shall be determined by sampling timbers in each charge, as may be desired by the purchaser's representative. Any holes which may be bored shall be filled with tight-fitting treated plugs.

Plant Equipment—Treating plants shall be equipped with the thermometers and gauges necessary to indicate and record accurately the conditions at all stages of treatment, and all equipment shall be maintained in condition satisfactory to the purchaser. The apparatus and chemicals necessary for making the analyses and tests required by the purchaser shall also be provided by plant operators, and kept in condition for use at all times.

Preservative

Chromated Zinc Chloride—For general construction, except in water, not less than ¾ lb. of dry salt per cubic foot of timber.

Treating Operation—The treating solution which shall not have a strength exceeding 5%, determined by the American Wood Preservers' Association "Standard Method of Analysis for Zinc Chloride," and which shall be no stronger than necessary to obtain the required retention of preservative with the largest volumetric absorption practicable, shall be thoroughly mixed before use.

Air-seasoned timber may be steamed in the cylinder for not less than one hour, nor more than two hours, at a pressure of not more than 20 lbs. per sq. in. After steaming is completed a vacuum of at least 22 in. shall be maintained for not less than 15 minutes, or until the wood is as dry and free of air as practicable. If the vacuum is broken while the condensate is being drained from the cylinder a second vacuum as high as the first shall be created. The preservative shall be introduced without breaking the vacuum until the cylinder is filled. The pressure shall then be raised to and maintained at a minimum of 100 lbs. per sq. in. until the quantity of preservative to insure the final retention stipulated is injected into the timber, or until less than 5% of the total quantity required has been injected during the latter half of one hour throughout which the rate of injections has persistently decreased while the pressure has been held continuously at 125 or more pounds per square inch. The temperature of the preservative during the pressure period shall be not less than 140°F., nor more than 200°F., and shall average at least 150°F. After the pressure is completed the cylinder shall be emptied speedily of preservative and a vacuum promptly created and maintained until the wood can be removed from the cylinder free of dripping preservative.

CONDENSED SPECIFICATIONS FOR CHROMATED ZINC CHLORIDE TREATMENT

Specifications placed with purveyors representing pressure treating plants need merely read "Impregnation with Chromated Zinc Chloride at the rate of not less than ¾ lb. (dry salt basis) per cubic foot of lumber. In all other respects treatment shall conform with Specification No. 35-C, of the American Wood Preservers' Association Manual of Recommended Practice as relates to salt treatment by the vacuum-pressure process."

CARBOLINEUM WOOD PRESERVING CO.

(INCORPORATED)

Manufacturers of Wood Preservative

Carbolineum Building, 528 West Highland Street

MILWAUKEE, WIS.

Product and Description

In 1876, the late Richard Avenarius invented Carbolineum and originated wood preservation by simple surface treatment. Carbolineum registered in the United States Patent Office as No. 14048, is always sold with the inventor's name added, as AVENARIUS CARBOLINEUM. The Arrow trade-mark makes identification easy.

AVENARIUS
REG. U.S. PAT. OFF.
TRADE MARK
CARBOLINEUM

Avenarius Carbolineum is a thin heavy oil, brown in color, ready for immediate use. It is thoroughly liquid and free from solids at normal temperatures.

Adds 100% to the Life of Wood—Always Uniform in Quality—Carbolineum preserves any wood against dry rot and premature decay.

It is manufactured in only *one standard grade of uniform quality,* therefore, future users can positively depend upon the same satisfactory results as achieved with it in the past.

No Increase in Fire Risk

It contains no volatile ingredients and does not increase fire risk.

Termite (White Ant) Protection

To drive out termites and to prevent their occurrence, it is necessary to apply a liberal coating of Avenarius Carbolineum about a foot wide to the footings of the building, as well as to all metal or concrete to form a complete barrier. Repeat this performance on the timbers on which the joists of the first floor rest.

A Long Lasting Stain

The rustic nut brown color of Carbolineum makes it well suited for staining dwellings, shingled roofs and other wooden structures, also for half timber work in place of paint.

Reputation

Avenarius Carbolineum has established its reputation for highest quality and uniformity. Its preservative value is no theoretical conclusion, but is based on actual results. References can be supplied by us from nearly every locality in the United States.

Where to Use

Screeds or Sleepers imbedded in Concrete
Ballast Timbers for Machine Foundations
Guards or Bumpers of Concrete Platforms
Half Timber Work and Shingles
Fence Posts, Poles or Props
Scale Platforms, Block Floors

Application

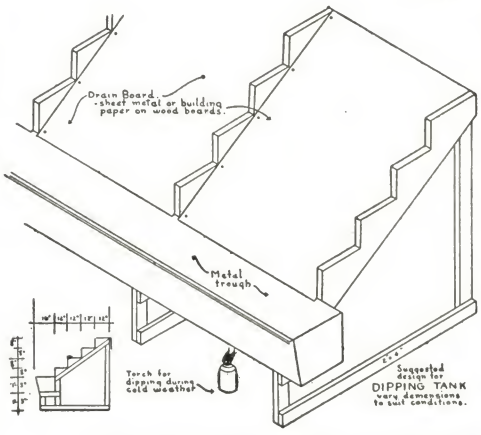
Dipping—*Method One*— For large quantities of lumber, a tank like the one shown (right) can be constructed at a very small cost at the job.

TABLE OF REQUIREMENTS

Two minutes for each inch of minimum of lumber thickness

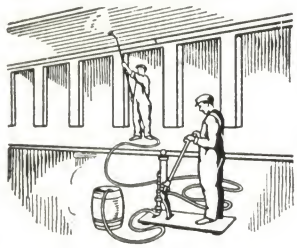
1000 Bd. ft.	Gals.
2x4	15
2x6	14
2x8	13
2x10	12
3x12	8
6x12	5
12x12	3

Labor, about 3½ hours per 1000 bd. ft.



Brushing or Mopping—*Method Two*—One gallon covers one coat, about 200 sq. ft. dressed lumber or 100 sq. ft. rough lumber or shingles applied at approximate rate of 1500 sq. ft. per 8 hours per man.

Spraying—*Method Three*— One gallon covers one coat, 150 sq. ft. dressed lumber or 75 sq. ft. rough lumber or shingles. Applied approximate rate of 5000 sq. ft. per 8 hours per man.



Approximate cost of labor and material—¾c to 1¼c per sq. ft. surface treated.

Suggested Form of Specification and Application Methods

A wood preservative known as Avenarius Carbolineum, manufactured by the CARBOLINEUM WOOD PRESERVING CO., Milwaukee, Wis., shall be used on .....

It can be used in its natural state when the temperature is above 70° F., otherwise when quick penetration is desired or on damp or partly seasoned wood, it shall be heated to 150° to 220° F. and applied hot. (Boiling point about 500° F., heating causes no danger with reasonable precautions.)

Dipping—*Method One*—(When the treatment of a large amount of lumber comes in consideration, this method is the most economical.) After trimming timber or lumber, immerse it in Avenarius Carbolineum. 1-in. lumber to be submerged about two minutes. Add two minutes for each additional inch of lumber thickness.

Brush or Mop—*Method Two*—After lumber is trimmed or framed, apply Avenarius Carbolineum liberally with a wire bound or rubber set long handle brush or mop. Saturate well at all cross cuts, mortises, tenons and knotty spots. On old wood, where decay has already started, decayed parts should be removed before applying oil.

Spraying—*Method Three*——When a large amount of surface or wood in structure already erected is to be treated, the spraying method can be used best. Avenarius Carbolineum will work with any efficient spraying or paint machine.

Free Samples

Upon request we will be glad to send a liquid sample of Avenarius Carbolineum or a sample of board which has been treated with it.

Warning

There is only one original and genuine *Carbolineum*, the invention of Richard Avenarius, known as Avenarius Carbolineum. Any other use of this name is a deliberate attempt to confuse and mislead the public.

PROCESSED LUMBER COMPANY

FORMERLY AMERICAN WOLMANIZED LUMBER COMPANY

Treated Wood for All Purposes

ELIZABETH, N. J.

PRODUCERS OF "AWLCO-IZED" LUMBER

For Use Wherever Wood Is Subjected to Moisture, Humidity or Other Rot-producing Conditions

"Awlco-ized" Lumber is designed to meet severest possible conditions of deterioration and generally lasts three times as long as untreated lumber. The name "Awlco-ized" represents a "product"—not simply a preservative or process. Hence undivided responsibility is ours.

A Recognized Preservative

The preservative we use is the sodium fluoride-dinitrophenol-chromate combination, commonly known as Wolman Salts. Its value has been demonstrated by many years of actual service.

Vacuum Pressure Treatment

This consists of impregnation to refusal by the full cell vacuum-pressure process in accordance with standard specifications of the American Wood Preservers' Association.

Properties of "Awlco-ized" Lumber Not Affected

"Awlco-ized" Lumber is clean, odorless, non-corrosive to metal, practically colorless, burns less readily than untreated lumber and can be painted, stained or otherwise finished. All the desirable characteristics of the natural wood are retained—strength, elasticity, resiliency, low conductivity of heat and sound, together with the ease with which it is worked.

Life of Lumber at Least Tripled

The durability of lumber treated by our process is well established. "Awlco-ized" Lumber can be depended upon to give at least three times the service life of untreated lumber installed under the same conditions.

The replacement of decayed wood usually involves the renewal of other materials in contact with it. With this in mind, the value of "Awlco-ized" Lumber is easily appreciated. The comparatively small increase in the first cost of the building or structure is offset many times by the savings in replacement expense. Over seven million feet of "Awlco-ized" Roof Plank is now in use.

Complete Facilities and Stacks for Immediate Shipment

In addition to a modern vacuum-pressure treating plant, our facilities include a sawmill, planing mill and preframing plant, a sash and frame factory and dry kilns.

"AWLCO-IZED" ROOF PLANK, SASH AND FRAMES

Roof Plank, "Awlco-ized" Yellow Pine

Standard 2x6-in. and 3x8-in., tongued and grooved plank which will effectively withstand the severe decay-producing conditions existing in dye-houses, bleacheries, weave sheds, paper machine rooms and similar highly humid occupancies. *Over 7,000,000 feet in use.*

Being thoroughly air-dried, they are preshrunk and will therefore lay a roof that will stay tight and can be painted either before or immediately after installation. Their low conductivity of heat is of material help in the prevention of condensation drip.

Stacks of "Awlco-ized" Roof Plank Ready for Immediate Shipping

Sash and Frames, "Awlco-ized"

Made of carefully selected clear white pine, treated in the rough and air seasoned four to six months.

Each piece tested for complete penetration of the preservative, thereby eliminating the possibility of exposing untreated areas during manufacture.

Construction details are such as give maximum mechanical strength. Joints are made with wooden dowels and waterproof glue.

Furnished glazed or unglazed; plain, primed or painted, as desired. Each sash branded and dated.

A Few Typical Installations

Arlington Mills
Apex Piece Dyeing Company
Jos. Bancroft & Sons
Bird & Son, inc.
Schmidt & Ault Paper Co.
Collins & Aikman Corp.
Duplan Silk Corp.
Eaton Paper Co.
Wm. H. Grundy, Co., Inc.
St. Regis Paper Co.
International Paper Co.
Lowe Paper Co.
Oxford Paper Co.
Riegel Paper Corp.

"AWLCO-IZED" YELLOW PINE SLEEPERS AND UNDERFLOORING

"Awlco-ized" Yellow Pine Sleepers and Underflooring have been specified for installation in high grade building construction by many well-known Architects as this representative group will indicate:

Grover Cleveland High School, Caldwell, N. J., Guilbert & Betelle
Physics Laboratory, Fordham College, New York, N. Y., Emile G. Perrot
School Building, Cohoes, N. Y., Tooker & Marsh
Department Store, B. Altman & Co., East Orange, N. J., Frederic G. Frost
Rentschler Residence, Hartford, Conn., Chester A. Patterson
Municipal Building, Glen Ridge, N. J., W. Orin Bartlett
St. Andrews School, Westwood, N. J., Fanning & Shaw
Administration Building, Philadelphia, Pa., Board of Education
Weequahic High School, Newark, N. J., Guilbert & Betelle
St. Joseph's R. C. Church, East Orange, N. J., Fanning & Shaw
Sports Building, Vassar College, Poughkeepsie, N. Y., Allen, Collen & Willis
Marcus L. Ward Home, Maplewood, N. J., John Russell Pope

Moisture emitted by fresh concrete is powerless to promote decay in "Awlco-ized" Yellow Pine Sleepers and Underflooring, since they are immunized against rot through *vacuum-pressure treatment* to refusal with the toxic fluoride-phenol mixture—*a time-tested wood preservative.*

A paragraph reading as follows embodied in your specifications will assure this protection against decay:

"All sleepers and underflooring shall be "Awlco-ized" Yellow Pine as furnished by the Processed Lumber Company, Elizabeth, N. J."

IN NEW YORK 1887-1926 — IN KENILWORTH SINCE 1919

PROTEXOL CORPORATION

SUCCESSOR TO CARBOLINEUM WOOD PRESERVING CO., INC.

OFFICE AND WORKS
37 Market Street
KENILWORTH, N. J.

TELEPHONE
Roselle 4-1900

CABLE ADDRESS
Carblineum

Products and Services

FIRE RETARDANT TREATMENTS for wood to New York City, United States Government and International (Marine) Convention requirements. Approved by the Underwriters' Laboratories, Inc. Stocks of fire-retardant wood for interior woodwork available. Ask for stock list.

DECAY PREVENTING TREATMENTS—With zinc chloride, sodium fluoride or fluor-phenol to standard pressure treatments of American Wood Preservers Association. Treating capacity 20,000 ft. b.m. per day.

INSECT PREVENTING TREATMENTS—Against termites (white ants), beetles or carpenter ants. Colorless and odorless.

COMBINED PRESSURE TREATMENTS of wood preservation and fire retardance for interior or exterior use.

WOOD PRESERVING OILS—For brush, spray or open tank treatments to recognized specifications. Also colorless or odorless preservatives. See Bulletin 43 for grade best suited.

SERVICES—Consultants on matters pertaining to wood impregnation. Chemical and engineering laboratories. Full size gas fired furnace for testing door assemblies, sash or partitions to A.S.A. and A.S.T.M. standards available for private or official tests.

TRADE-MARK

Facilities for Treatment

The equipment includes two pressure cylinders or retorts and eight 15,000-ft. capacity Moore dry kilns. Investigation and inspection is invited. References and literature upon request.

Fire Retardant Treatments

Fire retardant treatments vary in their protection with the kind and amount of chemicals injected. Class A or fire-resistant wood meets A.S.A. assembly tests for doors. Class B or incombustible wood meets New York City tests. Class C or slow burning wood is for roof or other solid construction. Approved by the New York Fire Insurance Exchange. Class D or non-inflammable wood is to New York, Philadelphia and Washington Fire Underwriters' requirements for scaffolding or other temporary wood structures—as for expositions, etc. Class E or flame-proofed preserved wood is for structural requirements in or out of doors. This combines in one treatment chemicals that will prevent decay with fire retardant chemicals precipitated in the wood in an insoluble form. Specify Pyresote Process for Class E.

For interior woodwork of fine residences, schools, hospitals, churches, libraries, museums, art galleries or institutional buildings, Class B or incombustible wood is recommended.

All fire retardant treatments are based on the 43-year-old Bachert Electric Fireproofing Process.

Reducing the fuel present in a fire area is contributing to fire protection, hence a reduction in the combustibility of fire retardant wood trim and stairs insures safe means of egress.

Fire-resisting doors, partitions or bulkheads of fire retardant wood will not warp, transmit temperature or pass smoke. These meet A.S.T.M. Specifications C19-33 and in addition provide an increased protection for the life hazard.

Principles of Fireproofing—The basic principle of fire retardant wood is to prevent the spread of a fire. The aim is to increase the resistance which such wood offers to burning. It is not to be assumed that such wood will endure indefinitely an increasing attack of flame without charring or disintegrating. Such wood will not receive, sustain or transmit flame. All flame existing will be only that of the extraneous substance. When flame or intense heat is applied to fire retardant wood, the wood will char at the point of contact, but it will not burst into flame and the destructive effect of the heat will be confined to the point of contact with the flame. Fire retardant wood aims at the permanent elimination of the property of inflammability from wood which is a non-conductor.

Combustion is controlled by injecting into the wood chemicals which, upon decomposing, give off incombustible gases which mix with the inflammable gases given off by heated wood and render them incombustible. Other chemicals give protection by fusing or forming a glasslike coating over the fibers of the wood, while a third class of chemicals used gives up waters of crystallization which are gradually released as the wood is heated during a fire. These and anti-corrosive chemicals which are injected into the wood must be so precipitated in the wood that they will remain fixed (insoluble) until liberated by heat.

The physical properties of wood, such as its strength, are but little affected by proper preservative or fire retardant treatments. The Service Bureau of the American Wood Preservers Association, Chicago, Ill., can supply details of tests on preservative treatments.

The weight of the wood is increased by the quantity of dry inorganic salt (chemical) injected which will vary from one-half pound per cubic foot for the lightest treatment with zinc chloride to eight pounds per cubic foot for the heaviest fire resistive treatment.

The hardness of wood is similarly increased but its workability is but little affected if tools of tungsten carbide are used. A survey is available. For further details consult Bulletin 45.

With the exception of white oak, which is only slightly darkened, the natural color of wood undergoes no change.

Wood impregnated with inorganic salts will receive and hold satisfactorily any desired finish of wax, varnish or paint.

Glue will hold tenaciously. This as well as corrosiveness on metal fastenings—as brass screws, iron nails and hinges—was reported on in National Lumber Bulletin for September, 1931, and was based on an examination of 26-year-old fire retardant wood from the Belmont Hotel in New York.

More detailed information will be found in Bulletin 46.

An interesting case proving the permanency of the Bachert Fireproofing Process used by Protexol is that of the R. G. Dun Building in New York City erected in 1897. In 1926, or 29 years after its erection, a fire broke out in the building adjoining on the north. The fire attacked the wooden window frames and sash on some ten or twelve stories, but the fire was not communicated to the Dun Building since the fire retardant wood, while decomposing, did not ignite.

The Bachert Electric Fireproofing Process was adopted by the United States for battleships, cruisers, torpedo boats, etc., on July 25th, 1895.

Tests—Tests for permanence were made on duly authenticated specimens in accordance with the Rules for Testing Fireproofed Wood approved and adopted by the Bureau of Standards and Appeals, New York City, which require for the shavings test a temperature of 800°, and for the timber test a temperature of 1700° F., with results noted below:

Building	Wood		Shavings Test		Timber Test		Unburned area, %	Required %
	Species	Age, yrs.	Flame sec.	Glow, sec.	Flame sec.	Glow, sec.		
Belmont Hotel	Red oak	24	none	none	none	5	63	55
Commercial Cable Building	Mahogany	33	none	none	none	2	67	55
Hotel McAlpin	Red oak	18	none	none	none	3	85	55
R. G. Dun Building	Red oak	33	none	none	none	2	77	55
80 Maiden Lane	Chestnut	23	none	none	10	0	70	55

Protection Against Decay and Insects

Preservative Experience—For over 50 years Protexol quality applied by brush, spray or open tank has been successfully used for the surface treatment (brush, spray or open tank) of timber to prevent decay and the attack of insects. Protexol (protects all) represents value demonstrated by actual time tests—by results.

Protexol Wood Preservative is the "standard" wood preservative for surface treatments established by practice.

Cost of Surface Treatments—This, while variable, will run from 1¢ to 1½¢ per sq. ft. of surface area. Brush treatments will add approximately 1% to the cost of a completed wooden structure. Spray treatments will run about $1.00 per gallon applied or 1¢ per sq. ft. for the best grade of Protexol Wood Preservative. Open tank treatments vary in cost according to the desired absorption and grade of preservative employed from 4% to 10% of the total cost of a complete wooden structure or 10% to 15% of the timber used.

REILLY TAR & CHEMICAL CORPORATION

INDIANAPOLIS, IND.

BRANCH OFFICES

NEW YORK, N. Y., 500 Fifth Avenue
CHICAGO, ILL., 2513 So. Damen Avenue
MOBILE, ALA., Box 310
MINNEAPOLIS, MINN., St. Louis Park
LOS ANGELES, CAL., Architects Building

FOURTEEN PLANTS TO SERVE YOU

Reilly TRANSPARENT PENETRATING Creosote

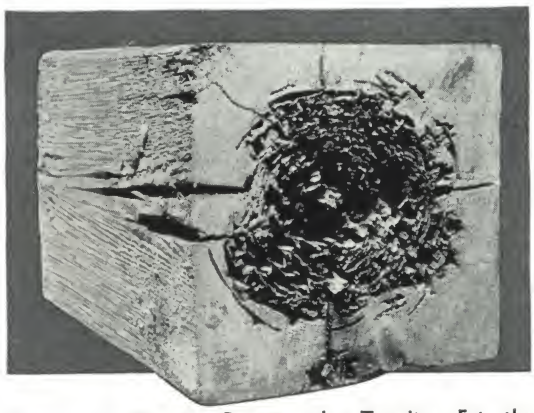
A Distinct Advance in the Art of Wood Preservation

Reilly Transparent Penetrating Creosote is a highly refined, scientifically blended coal tar creosote developed especially for the preservation of wood against decay and insect attack. The treated wood is unchanged in color, is dry—not oily—presents no health hazard, and can be painted.

Permanent Protection Against Termites and Decay—Reilly Transparent Penetrating Creosote is the result of prolonged research work in co-operation with the Termite Investigation Committee of California. Exhaustive scientific tests conducted by this committee, under conditions far more rigorous than any encountered in actual service, have demonstrated that Reilly Transparent Penetrating Creosote affords permanent protection against termites, powder post beetles and other destructive insects. Not only does this preservative eliminate these insects from buildings and lumber already infested by them, but it also prevents their return to wood treated with it. Tests conducted by The Reilly Laboratories have shown this scientific preservative to be highly toxic to wood destroying fungi.

Easily Applied—Does Not Affect Moisture Content of Seasoned Lumber—The ease with which lumber can be treated, and the rapidity with which it penetrates deeply into the wood make Reilly Transparent Penetrating Creosote an outstanding development in the field of wood preservation. Certain woods, such as larch, hemlock, fir and white oak, because of their refractory nature, are ordinarily difficult to treat. For these woods, it is recommended that Reilly Transparent Penetrating Creosote be applied under pressure. Other woods, such as southern yellow pine, ponderosa pine, sugar pine, cypress, sap cedar, red oak, sap redwood, ash, hickory, chestnut, maple, gums and cherry, can be successfully treated by immersion. Specific information on methods of treatment will be mailed on request.

As Reilly Transparent Penetrating Creosote contains no water, it can be used to treat seasoned lumber without affecting its moisture content. It can also be used on glued stock without affecting the strength of the joints. Thus it can be applied to completed window frames and sashes, doors, etc.



Example of Termite Damage—the Termites Eat the Heart Out of Heavy Foundation Timbers, Leaving Only a Mere Shell

Termite damage is conservatively estimated at $50,000,000 annually in the United States. Reilly Transparent Penetrating Creosote offers permanent protection against termites. It not only eradicates termites already present, but permanently prevents their return to wood treated with it

Leaves Lumber Dry—Unchanged in Color—and Paintable—Coal tar creosote in its crude state is heavy, oily and black. Its black color renders it impracticable for use where color painting is required. These objectionable features have been eliminated in Reilly Transparent Penetrating Creosote, while all of the toxic and preservative properties of the crude creosote have been retained. Wood treated with Reilly Transparent Penetrating Creosote remains practically unchanged in color. Its surface is dry—not oily. The lumber is ready for use immediately after treatment, and can be painted after sixty days. Before applying the first coat of paint the wood must be thoroughly brushed with a wire brush. The preservative treatment also acts to a degree as a filler, with the result that less paint is required to cover a given surface.

Safe and Economical to Use—There is no health hazard to workmen handling lumber treated with Reilly Transparent Penetrating Creosote. Neither is there any hazard to occupants of buildings constructed with lumber treated with this preservative, since lumber so treated is non-poisonous and liberates no toxic fumes. The use of lumber preserved with Reilly Transparent Penetrating Creosote is economical because it obviates future expensive replacements. Economy dictates the use of lumber treated with Reilly Transparent Penetrating Creosote especially for: all foundation timbers, framing, subflooring, flooring when laid on concrete, roof timbers, porches, window sashes and frames, doors.

Availability—Reilly Transparent Penetrating Creosote is available in 1, 5, and 55-gallon containers, and in tank cars.

Lumber preserved with Reilly Transparent Penetrating Creosote is obtained from progressive lumber dealers everywhere. Lumber dealers on the Pacific Coast can obtain pressure treated lumber from our Seattle plant.

Descriptive Literature Will Be Mailed on Request

TENNESSEE EASTMAN CORPORATION

Manufacturers of NO-D-K Wood Preserver

KINGSPORT, TENN.

NO-D-K A HIGHLY CONCENTRATED HARDWOOD CREOSOTE

Not Derived from Coal Tar—For Preserving or Staining Wood

Protects Woodwork Against Termites and Decay

The application of Eastman NO-D-K Wood Preserver to wood serves a dual purpose. It protects the wood against dry rot and decay; also against the attacks of boring insects, such as termites.

Has Extremely High Boiling Point

The superiority of NO-D-K has been demonstrated for years in practical use on all kinds of exposed woodwork. NO-D-K has such a high boiling point that it is not readily driven off by the heat of the sun. Being insoluble in water, it is not readily leached out by exposure to the elements.

NO-D-K Has High Penetrating Quality

Being derived from wood, NO-D-K has a natural affinity for wood, not possessed by other types of preservatives. This results in unusually deep penetration, which is essential for good protection.

NO-D-K imparts an attractive dark brown finish. This dark brown finish makes it very desirable where it is used for decorative as well as practical purposes.

Has Been Used for Many Years

NO-D-K Wood Preserver has been manufactured for more than thirty years and used by many leading industrial concerns. Since it is becoming increasingly important to protect foundation timbers and exposed woodwork of all kinds against the attacks of insects, NO-D-K is now playing an important part in the construction of residences.

Recommended Uses

Architects specify NO-D-K to be used on many parts of home construction—for instance on foundation timbers, half-timbered work, cornices, cornice blocks, porches, garage doors, and on all other types of exposed woodwork.

In industrial construction, NO-D-K is specified for all timbers exposed to the weather and to unusual conditions within the plant itself.

NO-D-K is also regularly used for protecting docks, boats, wooden bridges, trestles, and also for farm buildings of all kinds.

Where NO-D-K Has Been Used

NO-D-K has been used extensively throughout the United States and tropical countries. The following is an interesting service record:

The Philadelphia Dye Works, one of the largest dye plants in the United States, constructed a large group of fifteen buildings, approximately eighteen years ago. The roof timbers were dipped in NO-D-K to protect them against the high humidity encountered in dyehouses and paper mills. At the time of this printing, Philadelphia Dye Works reports that all the timbers treated with NO-D-K look as good as they did when they were put in place, and they have already lasted three times as long as untreated wood under similar conditions.

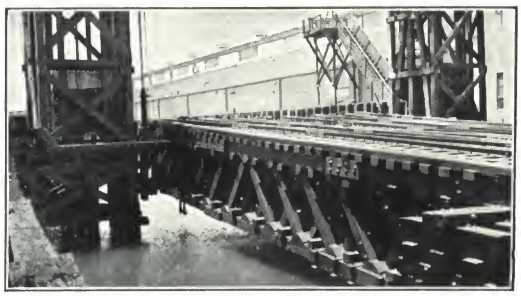
Contains No Caustic to Harm the Skin

NO-D-K is harmless to the skin. Most creosotes contain free carbolic acid which may seriously burn the skin or injure the eyes. It is, therefore, important to specify a safe, non-caustic creosote such as NO-D-K.

Distributors and Testing Sample

Distributors are located at strategic points throughout the United States and can quickly supply your requirements. Write us for the name of your nearest distributor.

Our free illustrated sixteen-page booklet, entitled "Preservation with NO-D-K," is an interesting guide to wood preservation, and may be had for the asking. A sample of NO-D-K will also be gladly mailed upon request.



Drop Gangway of Havana Terminal Railway Co., Havana, Cuba

Construction timbers have been treated with NO-D-K to protect it against the ravages of the tropical climate

Government Pier at Pearl Harbor, Honolulu

Treated with NO-D-K to increase its durability and insure a long and serviceable life

An Attractive Log House Protected by NO-D-K

Logs have been thoroughly treated with NO-D-K to prevent decay and the attacks of boring insects, particularly termites

METHODS OF TREATMENT WITH NO-D-K

NO-D-K should be applied in its natural state when the temperature is above 60° F. At lower temperatures, or when applied on damp or partly seasoned wood, it should be first heated to 100° to 125° F. Three general methods of applying are as follows:

Brush Method—Brushing is usually the easiest and most economical way to apply NO-D-K. For ordinary work, we recommend two coats applied with a large brush that spreads the oil freely.

Spraying—It is frequently more convenient to use a spray to reach all corners, cracks and joints, or to cover large areas.

Dipping—Where fairly large quantities are to be treated, the dipping method gives the best results as a greater absorption of the NO-D-K is obtained. We will be glad to furnish free blueprints of an inexpensive tank and furnish detailed instructions for dipping.

This method is ideal for treating foundation timbers, mill roof timbers, subflooring and heavy timbers of all kinds.

TERMINIX

DIVISION OF E. L. BRUCE CO.

GENERAL OFFICES

MEMPHIS, TENN.

LICENSEES IN 33 STATES

TERMITE CONTROL SERVICE FOR ERECTED STRUCTURES

Terminix is a nation-wide service for the control of subterranean termites in structures already standing. Under the strict supervision of the Terminix Division of E. L. Bruce Co., its Licensees apply the chemical Terminix to the understructure of termite-infested homes and buildings. This work is done by exclusive Bruce methods with high-pressure penetration equipment. The result is a chemical barrier which effectively blocks termites from gaining access to the structure from their nests in the ground. This is termed: "termite insulation." Property owners employing Terminix Insulation are further protected by regular reinspections and by a five-year guarantee and bond described in detail below.

BONDED TERMINIX INSULATION

These Understructure Wood Members Appeared Perfectly Sound Until Inspection for Termites Uncovered Severe Hidden Termite Damage

Terminix Licensees operate throughout every section of the country where termites are a problem and comprise the world's largest termite control organization.

Service Record

Terminix Treatments came into accepted use in 1928, after a four-year study of the practical aspects of the termite problem by E. L. Bruce Co. Since that time over 20,000 homes and buildings have been protected by this method. Included in this number are properties of practically every leading corporation and of many outstanding institutions, as well as the homes of thousands of property owners. Terminix Service has been successfully employed in all types of construction—residences, factories, churches, schools, government buildings, colleges, mills, office buildings, stores, apartments, etc.

General Description of Terminix Insulation

Terminix, the chemical used in this work, is a product of E. L. Bruce Co.—the world's largest maker of hardwood floorings. (See File Index.) It is applied exclusively by concerns which have been licensed by Bruce and carefully trained in the thorough and standardized methods of application developed by Bruce. Terminix is not poisonous to humans. Prior to the actual treating certain fundamental preparatory work is done, including the cleaning out of debris from beneath the structure and the repair or replacement of wood members weakened by termite damage.

Three Fundamental Steps—Due to the complexities found in different types of construction and due to varying termite conditions, the correct insulating treatment of any one structure is an individual problem in itself. The Terminix treatment, in general, provides the following triple protection: (1) The vital pressure-impregnation with the chemical Terminix of all wood members of the understructure which are or might be directly susceptible to the attack of termites. (2) Treatment of foundation walls and supports upon which wood members rest. (3) Such soil impregnation and extra wood treatment as will contribute to complete the insulation against further entrance of termites into the structure.

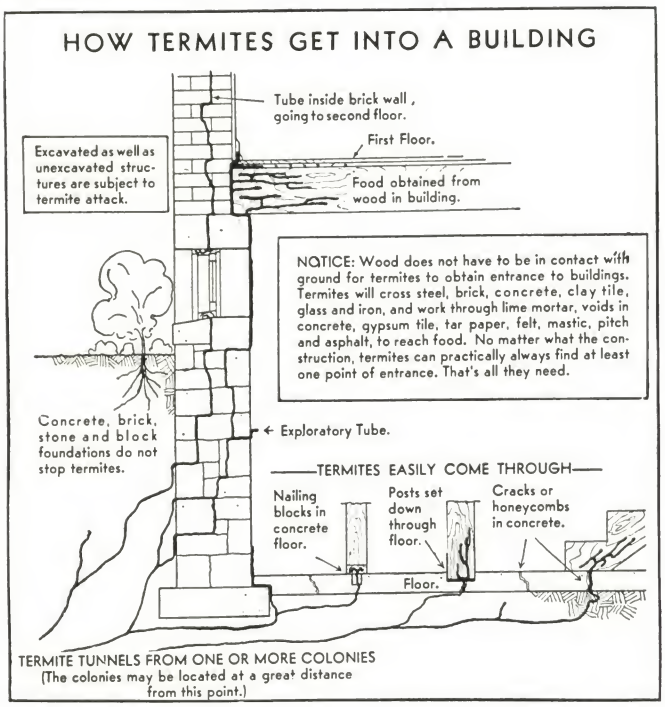
Complete Insulation Necessary—This scientific method is required in order to guard or block *every* approach of termites from their ground nests to the wood parts of a structure. Termites are ingenious engineers, and incomplete attempts to control them by partial or "spot" treatments commonly fail. They readily shift their activity to even the most remote and difficult points of entrance. Because termites work only inside the wood, chemical brush-coatings and surface sprayings do not reach the areas where they habitually work, and hence can not be effective. Terminix Service therefore involves thoroughly *insulating* the entire structure against attack with a barrier of Terminix, rather than an inadequate effort to "exterminate" or "eradicate" termites. After the work is completed, termites in the ground are shut out from thestructure. Those remaining in the wood cannot get back to the ground to obtain the moisture necessary to their existence, and shortly die.

Guarantee and Bond

Terminix applications are fully guaranteed by the licensed Terminix Company performing the work, and by E. L. Bruce Co. of Memphis, Tenn., for a period of five (5) years in strict accordance with the standard Terminix contract. Regular reinspections are made, during the life of the contract. The guarantee also includes re-treatments, in the event that any should be necessary, without further cost. An individual bond of the National Surety Corporation of New York is furnished to insure performance of each Terminix contract.

Free Inspection Service

Terminix Companies will make inspections of structures for termites, without cost or obligation. After each inspection, a detailed report will be rendered if evidence of termite infestation is found. This service can be obtained by communicating with the nearest Terminix Company, or by writing direct to the Terminix Division, E. L. Bruce Co., Memphis, Tenn.



Architectural Consultant—P. John Hoener, President of the St. Louis Chapter of the American Institute of Architects, is serving as Architectural Consultant and will answer any questions sent in by architects relating to the termite problem in any type of structure. Mr. Hoener, of the architectural firm of Hoener, Baum & Froese, is thoroughly informed on all practical phases of the termite problem. Address inquiries and requests for information to P. John Hoener, 3605 Laclede Avenue, St. Louis, Mo.

Literature

Any of the following literature will be sent on request: "Keep it *away* from Termites," "TERMITES—What They Are and What They Do," "History of Terminix," "A Partial List of Outstanding Terminix Jobs," and miscellaneous literature dealing with specific phases of the termite problem. Write Terminix Division, E. L. Bruce Co., Memphis, Tenn.

THE WOOD PRESERVING CORPORATION

Preserved Lumber for Every Purpose

Koppers Building, Pittsburgh, Pa.

AFFILIATE

AYER & LORD DIVISION
CHICAGO, ILL.

NATIONAL LUMBER & CREOSOTING CO.
TEXARKANA, ARK.-TEX.

CENTURY DIVISION
PITTSBURGH, PA.

SALES OFFICES

BALTIMORE, MD.
BOSTON, MASS.
CHARLESTON, S. C.
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COLUMBIA PARK, OHIO
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HOUSTON, TEX.
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NEWPORT, DEL.
PHILADELPHIA, PA.
PITTSBURGH, PA.
REED CITY, MICH.
ST. LOUIS, MO.
SUPERIOR, WIS.
TEXARKANA, ARK.-TEX.

The Organization

The Wood Preserving Corporation and Affiliated Companies, with sales offices and pressure treating plants throughout the country east of the Rocky Mountains, are prepared to supply all requirements for treated lumber for every purpose. Complete stocks of seasoned lumber are maintained at all times ready for immediate treatment in accordance with the architect's specifications, and are assurance of quick and efficient service.

Preservatives and Treatments

Various preservatives and treatments are available to meet the conditions of any particular installation; the more commonly used being Creosote Oil, Zinc Chloride, Chromated Zinc Chloride and Wolman Salts. Material treated with salt solutions can be painted or stained the same as untreated wood.

Preventing Wood Waste

Certain species of wood are naturally more resistant to decay and insects than others. Unfortunately, the drain on such resistant woods has been heavy and in many instances the supply has been reduced to such an extent that values have increased to proportions precluding their use for certain purposes. With the use of an accepted standard preservative treatment many of the less durable species can be made more decay- and insect-resisting than the naturally decay-resisting species in their natural state.

However, the mere subjection of wood to the process of treatment with a preservative material will not produce the desired results unless the preservative itself is an effective one, and proper methods of injecting it into the wood are followed. In order that the architect may understand the action of the preservative in preventing decay and insect attacks, let us examine briefly the causes of such damage.

Decay—Investigations show that decay in wood is always caused by fungi, which consist, for the most part, of very fine threadlike filaments that penetrate the wood in all directions.

The four requirements for the growth of fungi are moisture, air, favorable temperature and food. To prevent decay it is necessary to deprive the fungi of one or more of these requirements but this is usually impossible under ordinary conditions, except for food. Therefore, the most effective method of preventing decay is to make toxic the food supply and it is upon this principle that the successful use of wood preservatives is based.

Insects—Lumber in service is chiefly damaged by the termite, or as it is commonly called, the white ant. These are of two species, one the subterranean which attacks wood indirectly from burrows in the earth; and the other non-subterranean which attacks the wood of buildings or trees directly. The cellulose in the wood provides their food and they attack not only buildings but other forms of lumber as well.

Surface spraying with chemicals does not protect wood against such attacks as the termites attack from the inside. It has been definitely established, however, that wood treated under pressure with the proper preservatives according to accepted standards, by which the preservative is forced into the interior of the wood, is effective against termite attack and should be used in any construction where termite damage may be feared.

By preventing decay and damage by insects, proper preservative treatment performs a triple service. It increases the life of the wood three or four times that of the natural life, thereby saving the consumer the cost of replacement several times during the life of the treated timber and eliminates the costly repair expense; it makes sapwood longer-lived than the more durable heartwood, thus making it unnecessary to specify heartwood for durability; and it permits the use of the naturally non-durable woods which otherwise have a much more limited usefulness.

OUR PRODUCTS

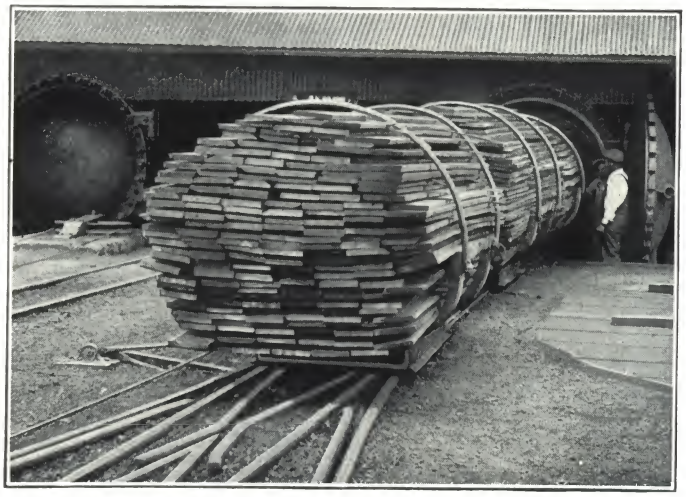
Treated by Recognized Processes and Preservatives

Foundation Timbers
Joists—Sills—Posts
Sub-flooring
Structural Lumber
Roof Stringers

Highway Guard Rails
Posts—Culverts
Bridge Material

Poles—Piling
Railroad Cross Ties
Mine Ties and Timbers

Left:
Untreated Wood Destroyed by Termites



Selected Lumber Entering Retort for Preservative Pressure Treatment

Preserved Wood in Building Construction

The first large users of preserved wood in this country were the railroads, who began the extensive use of preserved ties many years ago and today use preserved wood in large quantities, not only for ties but for piling, bridge timbers, crossing planks and many other purposes. Seeing the great savings which the railroads realized from the use of preserved wood, other large industries have adopted it in ever increasing amounts. Telephone, telegraph and power poles, docks and piers, highway bridges, mine timbers are all being made of preserved wood. Today there are relatively few industries in this country using wood for construction purposes which do not preserve a considerable portion of it.

In building construction, however, and particularly that designed by the architect, the use of preserved lumber has been comparatively limited, because of unavailability and probably of a lack of understanding of its advantages and its possible application to his particular needs. The features and merits of preserved timbers which have made it so useful for large industries make it even more desirable for building construction work.

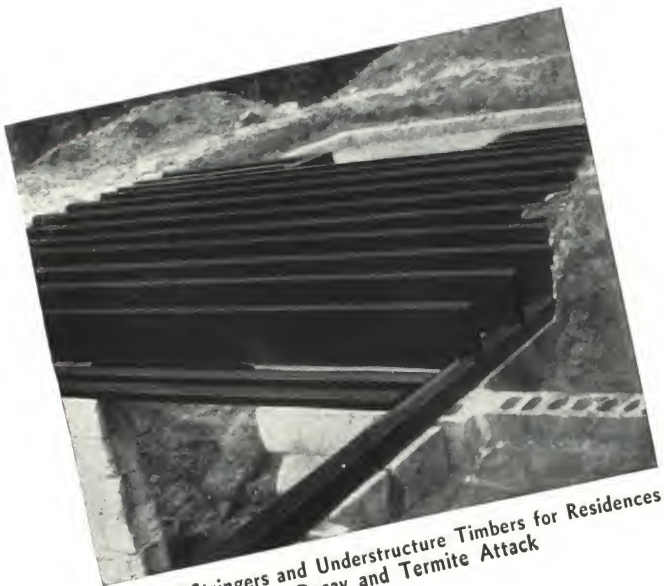
Upon investigating the subject many architects are surprised to find that a relatively small investment will provide all the treated lumber required for most buildings. For example—in the average small house calling for approximately 10,000 board feet of lumber, only certain parts need be treated, depending upon the construction. In such a structure an investment of $150.00 for treating the necessary lumber will often provide ample protection against decay and termites, and this is only a small percentage of the entire cost of the building. What is of more importance is not this first cost but the fact that it is only a very small part of the cost of removing decayed portions and replacing them later.

A complete list of the places in which preserved lumber is especially useful is unnecessary here but, in brief, these may be described as any portions of a structure in contact with or near the ground, in damp or poorly ventilated basements, or in contact with other timbers or with masonry girders, joists, stringers, subflooring, window frames, roof timbers, and shingles. In such places decay is certain if moisture accumulates in the wood, and in some localities attacks by termites soon destroy such timbers and make replacement necessary.

Selecting the Proper Treatment

Selection of the proper preservative and method of treatment depends upon purpose of the timber, location and many other factors. As the science of wood preservation is a highly specialized subject requiring the services of engineers who have made a careful study of the many problems involved, The Wood Preserving Corporation and Affiliated Companies wish to take this opportunity to offer the fullest co-operation of their Research Departments and Engineering Staffs in assisting the architect, engineer and contractor in the selection of the treatment best suited to the project. A telephone call to the home office or any of the branches listed above will bring one of our engineers to your office for consultation and assistance. We will appreciate this opportunity to work with you in securing longer lived lumber and maximum economy in wood construction, which is now available and obtainable from our nation-wide located plants.

"Sunlight" All-wood Home—Century of Progress, Chicago
Footings, sills, floor joists and sub-flooring preservatively treated by the pressure process



Creosoted Stringers and Understructure Timbers for Residences Resist Decay and Termite Attack

Salt-treated Sub-flooring Being Laid Over Creosoted Joists

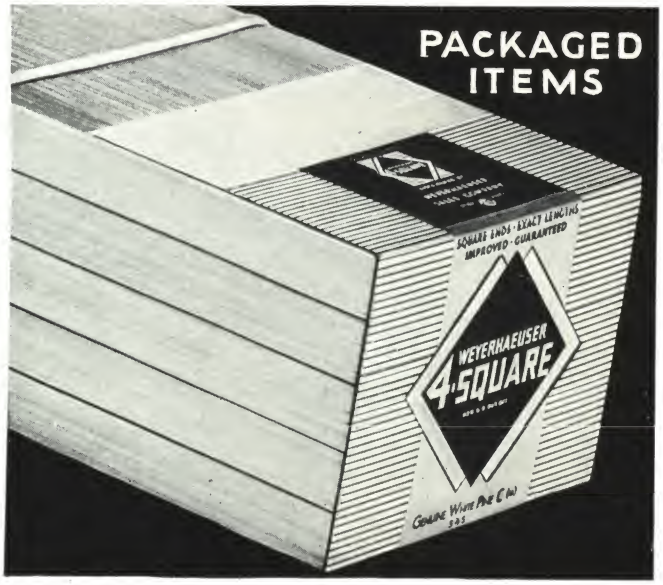
WEYERHAEUSER SALES COMPANY

Representing the Weyerhaeuser Affiliated Lumber Mills

First National Bank Bldg., ST. PAUL, MINN.

ZONE AND DISTRICT OFFICES IN PRINCIPAL CITIES

See File Index for Edham Stained Shingles



General Description

Weyerhaeuser 4-SQUARE is a complete line of improved precision lumber products for general construction purposes. It includes a range of items in five species—Genuine White Pine, Ponderosa Pine, West Coast Hemlock, Douglas Fir and Western Red Cedar, as well as many items in Northern Pine, Inland Cedar and Larch.

Refined Manufacture

Each piece of lumber shipped under the Weyerhaeuser 4-SQUARE brand is rebutted on precision machinery to exact full length. Ends are trimmed square and are smooth. All items are properly seasoned.

Standard Grades

Weyerhaeuser 4-SQUARE lumber is graded in strict accordance with the recognized Association standard grading rules of the several regional producing districts.

Standard Sizes and Patterns

Weyerhaeuser 4-SQUARE is made to Association standards of finished sizes and patterns. In addition, finish lumber can be had, if desired, in Eastern Standard Widths.

Three Identified Groups of Items

The Weyerhaeuser 4-SQUARE Lumber Line is made up of three groups of items:

Piece Items.
Packaged or Bundled Items.
Cartoned Items.

Piece Items—These are inch common boards, thick common, dimension; Guide-Line Framing; also the following end-matched items: flooring, ceiling, drop siding, sheathing and sub-flooring. The end-matched items are bundled and labeled. The other piece items are machine-branded both ends with the name "Weyerhaeuser 4-SQUARE."

Packaged or Bundled Items—These are inch finish, thick finish, stepping, drop siding, flooring, ceiling, bevel siding and Colonial siding.

These items are tied in bundles and some items have both ends covered with fiber caps which protect the smooth-trimmed ends. The faces of all pieces in each package are protected; the two outside pieces in each package are placed with the low grade or reverse side exposed. On the face end of each end cap is printed the brand name, "Weyerhaeuser 4-SQUARE," also the species, grade and size. The items which are bundled and not capped are labeled.

Cartoned Items—Include all standard moulding patterns not exceeding 5 in. in width. These items are packed in dustproof fiber cartons, which carry on both ends the brand name, species, catalogue number, the size and lengths.

Construction Advantages

Weyerhaeuser 4-SQUARE lumber, manufactured on precision machinery and properly seasoned, makes for better construction at lower cost.

Exact lengths and smooth ends save cutting. The square ends assure full bearing, sturdy framing and tight joints. The identification and guarantee insure against substitution.

Guaranteed by Weyerhaeuser

A guarantee of true species and grades, also quality of manufacture is placed on each shipment by Weyerhaeuser, one of the world's largest producers of home building materials.

Distributed Nationally

Weyerhaeuser 4-SQUARE is sold by authorized retail lumber dealers from Coast to Coast.

Descriptive booklet on request

4-SQUARE IMPROVEMENTS

PRECISION is the distinguishing feature of 4-SQUARE improvements. Special high-speed machines, designed for the purpose, eliminate approximation in the cutting of 4-SQUARE lumber. These machines, in their additional processing, produce tailored lumber, ready for use on the job. Specifications mean something only if they are met with exactness. When 4-SQUARE fills the order, "exactly" takes the place of "almost."

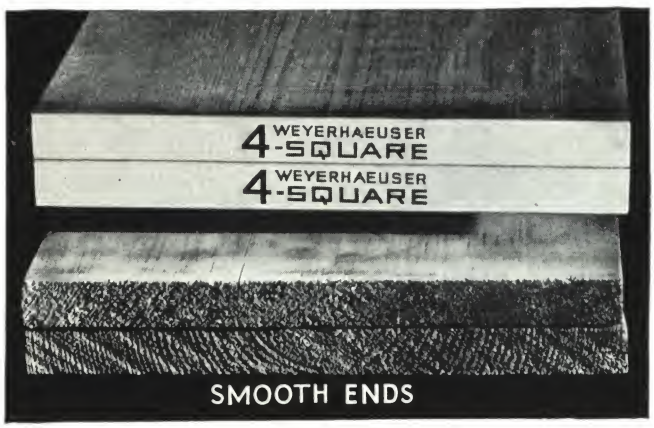
EXACT LENGTHS make possible the use of 4-SQUARE lumber without cutting to size on the job. This saves time and means that men working with 4-SQUARE lumber can devote more time to actual construction; also it means accurate estimates of lumber requirements can be made. Having the proper supply on hand avoids unnecessary hauling and danger or shortage.

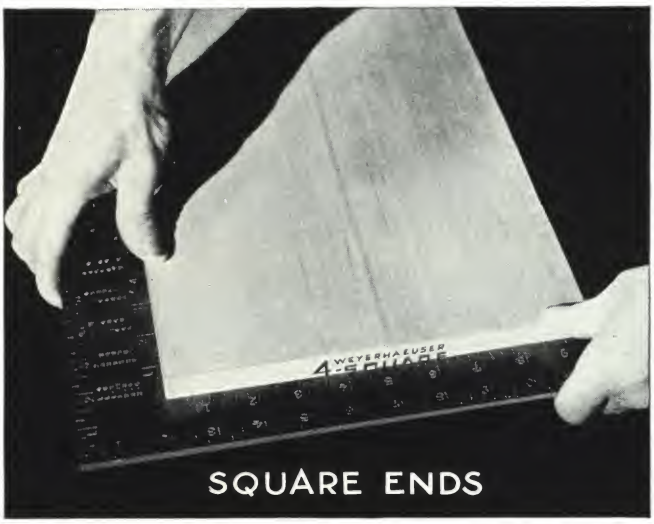
SMOOTH ENDS eliminate more than fifty per cent of trimming on the job. No longer need the carpenter waste time smoothing the ends of a board before putting it into use. Instead he can give himself to finer craftsmanship, applying his creative ability more completely. Freeing the carpenter from unnecessary interruptions is a step toward more economical construction.

SQUARE ENDS characterize all Weyerhaeuser 4-SQUARE lumber. Time is saved by freeing the carpenter of the necessity of squaring the ends of a board before nailing it into place. Both ends of every piece of 4-SQUARE are exactly square; each piece is ready to use as delivered. The result is that the use of 4-SQUARE lumber on a house job makes for fast and accurate construction. Better results become cheaper to get.

TIGHT JOINTS are assured when the ends of two pieces of 4-SQUARE lumber come together. Since tight joints are a construction "must," they have to be made by hand when the lumber does not automatically effect them. The accurately squared ends of 4-SQUARE guarantee a perfect fit when two pieces are fixed in position. Making ends match on the job wastes time—4-SQUARE is made to order for tight joints.

FULL BEARING depends upon square ends and even surfaces. In Weyerhaeuser 4-SQUARE lumber these requirements are met in such a way that framing members possess flat surfaces that insure equal distribution of stress. The strength of a framing member goes up if its supported weight becomes more evenly distributed. In assuring full bearing of framing members, 4-SQUARE makes for tighter, stronger structures.





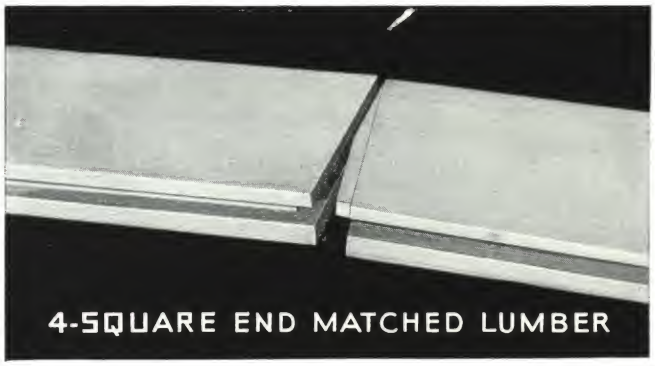
4-SQUARE GUIDE-LINE FRAMING

4-SQUARE Guide-Line Framing is manufactured in five American Lumber Standard dimensions: 2x4, 2x6, 2x8, 2x10, 2x12 in.—each size in standard exact lengths from 8 to 20 ft.

In addition to containing all other 4-SQUARE improvements, Guide-Line Framing is calibrated every inch with guide lines pressed into the face of each piece—a help in measuring, placing, fitting, and leveling of framing members. All four edges of each piece are chamfered or slightly rounded to facilitate handling.

Each piece is marked with the full species name, with the full grade name, and with the trade-mark which is a positive guarantee by the maker of all specific precision advantages claimed for this improved framing material.

Descriptive booklet on request



4-SQUARE ENDLESS (END MATCHED) LUMBER

This is another important group of items in the Weyerhaeuser 4-SQUARE Line. 4-SQUARE Endless Lumber (the trade calls it "end-matched") is tongued and grooved on the ends and edges so that it meshes and "welds" in construction to form strong, tight panels as large as the side of a house. As the ends of the boards interlock it is not necessary to join them over framing members. Thus cutting and fitting are reduced to a minimum.

4-SQUARE Endless Lumber is available in a variety of widths for sheathing, drop siding, roof boarding, subflooring, ceiling, lining, partitioning and for concrete forms. It comes in a range of grades to suit the type of job. As it is not necessary or advisable to use Endless Lumber in definite specified lengths, it comes in random lengths which are more advantageous for construction and application. It comes tied in labeled bundles—each bundle containing pieces of approximate length.

4-SQUARE Endless Lumber is a valuable contribution to low-cost housing and construction. It saves time, material, and labor. It benefits all who make, distribute, specify, use and buy it. The 4-SQUARE Lumber dealer will be pleased to demonstrate.

Descriptive booklet on request

The following booklets in your files will make available to your personnel, information on the progress made in lumber manufacture and use.

BOOK	PUBLISHED BY	PRICE
Lumber Grade-Use Guide	National Lumber Mfrs. Assn. Washington, D. C.	$1.50
Wood Structural Design Data	National Lumber Mfrs. Assn. Washington, D. C.	$1.00
TECO Manual	Timber Engineering Company Washington, D. C.	No Charge
Improved Lumber for House Construction	Weyerhaeuser Sales Company St. Paul, Minn.	No Charge
Endless Lumber	Weyerhaeuser Sales Company	No Charge
Standard Specifications for House Framing	Weyerhaeuser Sales Company	No Charge
Facts About Genuine White Pine	Weyerhaeuser Sales Company	No Charge

ARKANSAS SOFT PINE BUREAU

LITTLE ROCK, ARK.

Products

ARKANSAS SOFT PINE PANELING; INTERIOR FINISH; MOULDINGS; RIFT (quarter-sawn) CLOSE GRAIN FLOORING in End-matched and Plain End; COMMON LUMBER.

Sold by

Local retail lumber dealers and planing mills east of the Rockies. Elsewhere by special arrangement.

Individual Advantages

Arkansas Soft Pine is the highest quality Shortleaf southern pine, known botanically as Pinus Enchinata.

Due to its unique individual qualities—namely, freedom from pitch, light weight, soft lustrous texture and fine grain—the wood enjoys marked preference, particularly for paneling, woodwork and all trim and moulding details where a close grained, readily workable wood is required.

General Uses

Arkansas Soft Pine in common grades provides dependable, thoroughly seasoned framing material for residences, stores, apartments, churches and buildings of like character.

Specific Uses

For Paneled Walls—In both formal and informal design. Scientifically seasoned, kiln-dried stock in both Clear and Knotty material. Walls finished in Clear provide soft mellow effects of unusual beauty.*

To Specify Clear Paneling—Designate Trade and Grade marked Arkansas Soft Pine in B & Better Grade, S4S and sanded. All member sizes are standard and run $\frac{25}{32}$-in. thickness by 4 to 12-in. widths (net ½-in. scant). These widths afford flexibility in executing special or standard panel designs and ordinarily are used in connection with stock of $1\frac{1}{16}$-in. thickness and same widths for stiles and pilasters (see work sheets furnished on request*).

To Specify Knotty Paneling—Designate Arkansas Soft Pine No. 1 Common S4S selected for sound knots, freedom from splits, worm holes, wind shake or torn grain; re-kiln dried to moisture content of B & Better Finish. Sizes same as Clear.

Satin-like Interior Trim—It is from the thick, clear sap wood with its fine, lustrous texture and absence of resinous oils that the famous quality Arkansas Soft Pine is manufactured. *For enamel, stained or dull wax rub finishes this wood is eminently satisfactory.*

Flooring—Arkansas Soft Pine Flooring is available in approximately ten grades: Rift (quarter-sawn) of the close grained variety, cut from the heart of butt logs is a superior flooring for residential, apartment, store and school installations. Preferred pattern in standard sizes measures $\frac{25}{32}$ in. thickness by 2⅜ in. face and runs from 8 to 20 ft. in length, the greatest percentage being from 10 to 16 ft. When laid these lengths entail comparatively few end-joints, producing a smooth sweep of finished floor. Arkansas Soft Pine Flooring will take any desired treatment in stains, varnishes or wax, and provides a long-wearing floor of exceptional merit.

*A special brochure on Arkansas Soft Pine paneling installations, including detailed work sheets for three styles of panel design will be furnished on request.

Genuine Arkansas Soft Pine

Is Trade-Marked with the symbol appearing at the top of this page, and Grade-Marked in accordance with the recommendations of the Central Committee on Lumber Standards. These brands guarantee standard grades, scientific drying and seasoning, and correct handling.

GRADE

MARK

This Grade Mark Is Your Guarantee of Standard Quality Lumber and Woodwork

Technical Data and Information

The Arkansas Soft Pine Handbook contains complete grading rules, standard moulding designs, including *numbers endorsed by the American Institute of Architects* in conjunction with the Central Committee on Lumber Standards; also lumber actuary, shipping weights, painting and finishing instructions, and concise description of the wood. Copies will be furnished the profession on request, together with natural and finished samples. Address all requests to the ARKANSAS SOFT PINE BUREAU, Boyle Building, Little Rock, Ark.

Member Companies

All stock bearing the Arkansas Soft Pine trade-mark is manufactured and sold exclusively by the following companies, and is merchandised and distributed through local retail dealers and planing mills:

CADDO RIVER LUMBER CO., Glenwood, Ark.
Sales Office: R. A. Long Building, Kansas City, Mo.
CROSSETT LUMBER CO., Crossett, Ark.
DIERKS LUMBER & COAL CO., Dierks, Ark.
Sales Office: Dierks Building, Kansas City, Mo.
FORDYCE LUMBER CO., Fordyce, Ark.
SOUTHERN LUMBER CO., Warren, Ark.
FROST LUMBER INDUSTRIES, INC., Shreveport, La.
Plant: Huttig, Ark.

Arkansas Soft Pine for Interior Paneling (Paul Revere Design)*

APPALACHIAN HARDWOOD MANUFACTURERS, Inc.

REPRESENTING THE GREATER PROPORTION OF APPALACHIAN HARDWOOD PRODUCTION

414 Walnut Street, CINCINNATI, OHIO

APPALACHIAN OAK

For Fine Architectural Woodwork

Appalachian Hardwood Region and Products

The Appalachian Hardwood Region is that mountainous area extending southwesterly from Pennsylvania to Georgia, as illustrated in the shaded portion of the insignia to the right. According to a former Secretary of Agriculture, here are "the heaviest and most beautiful hardwood forests on the continent." In this region more than 2,000 sawmills each year normally produce in excess of one billion board feet of splendid Appalachian hardwood lumber, including Oak, Yellow Poplar, Chestnut, Cherry, Basswood, Birch, Beech, Maple, Ash, and other species, as well as Oak, Beech and Maple flooring.

Characteristics of Appalachian Oak

Favorable growth conditions affecting Appalachian hardwood timber impart unusual qualities to Appalachian Oak, long regarded as an ideal material for fine architectural woodwork. Rich soil, good drainage and temperate climate endow Appalachian Oak with superior seasoning and working properties. The same factors are responsible for the slow, steady growth, which in turn produces the fine grain and uniform texture and color that make Appalachian Oak *unexcelled* for the manufacture of hardwood products in which both *beauty* and *serviceability* are desired.

Availability of Appalachian Oak

Appalachian Oak lumber is widely distributed, and is readily available to architects through planing mills and cabinet makers. Each year hundreds of millions of feet of Appalachian Oak reach consuming markets through the usual channels of distribution.

Grades and Effects

Appalachian *White* and *Red Oak* are available in all standard commercial grades and sizes, which include material for every purpose and effect of interest to architects. These grades offer many interesting and decorative possibilities.

Appalachian White Oak is obtainable in three grain effects: (a) *Plain sawn* or flat grain, (b) *Rift sawn* or comb grain, and (c) *Quarter sawn* or flake figure. See illustrations on opposite page. *Plain sawn* Appalachian White Oak woodwork can be furnished in both the *Clear* and *Knotty*, or *Antique*, effects. *Rift* and *Quarter* sawn Oak woodwork is available in the *clear* effect only. Specify effect desired.

Appalachian White and Red Oak also are made into veneers of standard thicknesses of from 1/28 in. to 1/4 in. and can be obtained in three forms: (a) *Sliced*. (b) *Sawn* (both sliced and sawn available in flat grain, comb grain and quartered effect.) (c) *Rotary* cut. *Sliced* or *sawn* veneers produce the finer grain pattern. *Rotary* cut veneer, due to manner in which the sheet of wood is removed from the log, is characterized by a pronounced grain figure. For a fine, subdued grain pattern specify *sliced* or *sawn Appalachian White Oak* veneer, depending on the desired thickness and purpose of veneer.

Distinguishing White from Red Oak

The distinguishing features of *White* and *Red Oak* lie in their grain and color. Red Oak usually has a coarser grain and a distinctly more reddish tinge, especially near knots. For more accurate methods of identifying these woods when in doubt the following are suggested:

(a) With a sharp knife cut away a portion of the *end grain* of the piece of Oak in question, thus exposing the pores between growth rings. If pores, under a strong magnifying glass, are open, distinct, and can be counted readily, the wood is Red Oak. If pores are closed, indistinct and difficult to count, the wood is White Oak.

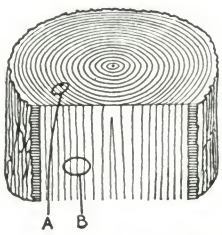
(b) Examine under a magnifying glass the flat surface of a piece of freshly planed but not sanded Oak. In the pores of White Oak a glistening, amber-colored substance *(tyloses)* will be present, whereas little or none of this substance will show in Red Oak.

(c) Smoke can be blown through a piece of Red Oak eight inches long; this is not possible with White Oak.

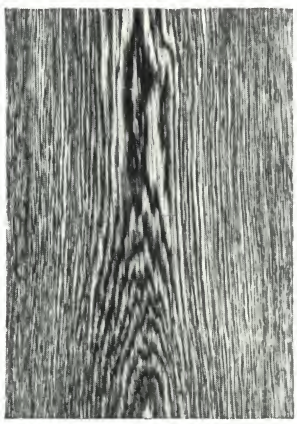
(d) The medullary rays or quartered flakes are longer in White Oak.

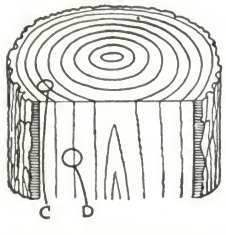
SHOWING EFFECT OF RATE OF GROWTH ON CHARACTER OF GRAIN PATTERN OF OAK

OAK PANELS PHOTOGRAPHED ON SAME SCALE OF REDUCTION



Slow growth of White Oak on the slopes of the Appalachian Highlands produces narrow annual rings (a) which in turn result in fine grain (b) illustrated in the Appalachian White Oak panel on right





Rapid Oak growth resulting from excess moisture and peculiar soil and climatic conditions in some areas cause wide annual rings (c) which in turn produce coarse grain (d) illustrated in the White Oak panel on left

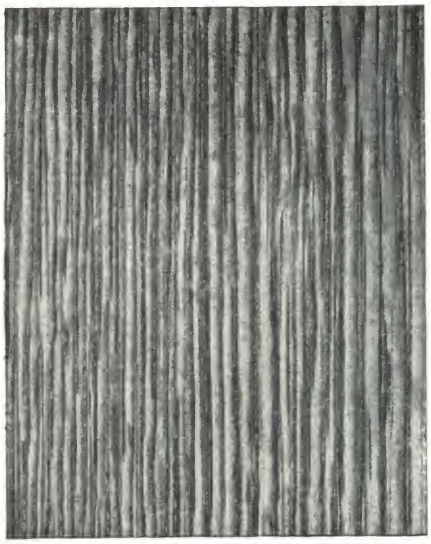
Importance of Specifying "Appalachian"

Growth conditions have a pronounced effect on the appearance and quality of Oak. Those in the Appalachian territory cause Oak to develop slowly, and, consequently, produce the *narrow* annual rings that are indicative of *fine grain*. In some

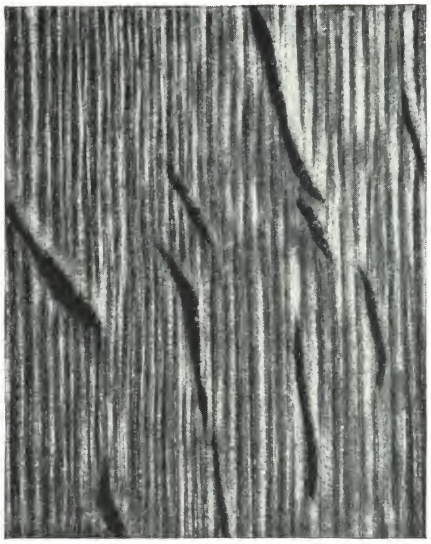
TYPICAL EFFECTS AVAILABLE IN APPALACHIAN WHITE OAK

Scale of Grain Pattern Full Size

To obtain this effect specify *plain sawn Appalachian White Oak*



This effect obtained by specifying *Rift Sawn* or *Comb grain Appalachian White Oak*



Specify *Appalachian quarter sawn White Oak,* small flake, to obtain this effect

other regions growth conditions cause more rapid tree development and Oak grown there is characterized by *wide* annual rings, *coarse grain,* and a much *harder* wood substance. See cuts on preceding page.

Standard rules for grading hardwoods *do not define* character of grain, quality of texture, kind of seasoning or the working and finishing properties of wood. Therefore, to obtain Oak possessing the characteristics most desired, the architect should specifically describe the kind and quality of Oak required. The simplest and most effective way to do this is to specify "Appalachian" Oak. This specification offers assurance of receiving Oak of unsurpassed *beauty of grain and texture,* unrivaled seasoning and working properties, and unusual ability *to stay in place* after installation.

How to Specify "Appalachian" Oak

The word "Appalachian" should precede the name of each wood specified, such as *Appalachian* White Oak, *Appalachian* Red Oak, etc. The term *Appalachian* identifies the *source* as well as the *character* of the Oak specified and gives the architect assurance of obtaining the desired effects.

The use of the term *Appalachian* usually is permissible in specifications on Federal and State projects. When the name itself cannot be used, Appalachian Oak can be obtained by means of *description* and *use of samples.*

In addition to using the word *Appalachian,* the following points should be considered in specifications:

(1) Character of Lumber—Specify if woodwork is to be *White* or *Red* Oak (the latter being slightly cheaper) and if it is to be (a) *Clear* or (b) *Sound Knotty,* often called *Antique.* Indicate whether or not characteristics such as knots, burls, worm holes, etc., are to be with or without limit.

(2) Grain Effects—Specify if Oak is to be (a) *Plain sawn,* (b) *Quarter sawn* or (c) *Rift sawn.* See illustrations above. *Rift* sawn supplied only in *White* Oak.

(3) Types of Panels—Specify if panels are to be (a) Solid Wood or (b) Veneered. Indicate number of veneer plies. Specify *Appalachian Chestnut* or *Yellow Poplar* for panel cores and *Yellow Poplar* for cross banding.

(4) Kind of Veneers—Specify if veneers are to be (a) *Sliced,* (b) *Sawn* or (c) *Rotary* cut. Indicate thicknesses.

How to Recognize Appalachian Oak

Since rough hardwood lumber is a raw material subject to several manufacturing processes before it becomes finished woodwork, the branding of hardwoods, from the ultimate consumer's point of view, is an inadequate means of identification. Therefore, not all Appalachian sawmills brand Oak and other hardwoods. When used, the brand mark is AHL imprinted on one end of each board.

Appalachian Oak usually can be identified by its own exclusive characteristics. Once architects, through handling or using Appalachian Oak, become familiar with its beautiful grain, its fine texture and other excellent qualities, these serve as unmistakable brand marks. To architects who desire to become acquainted with Appalachian Oak and to be able to recognize *on sight* this outstanding cabinet wood, samples will be supplied.

Obtaining Uniformity in Woodwork

To obtain uniformity in the grain pattern, texture, color and finishing qualities of Oak woodwork where several subcontractors are supplying Oak trim, cabinets, panels, doors, stair cases and floors, it is necessary that the specifications be *very explicit* as to kind and quality. To avoid difficulty and disappointment, the following procedure is suggested:

(a) Specify that *all Oak* lumber and veneers used by various subcontractors be *Appalachian.*

(b) Have thorough understanding with each subcontractor regarding the *character* of Oak to be furnished by *showing him samples* of Oak required and insist that *he submit samples* of Oak he intends to use.

(c) Where practical, have *one* subcontractor supply all the Appalachian Oak lumber and veneers from whom other subcontractors may obtain their Oak lumber requirements.

Appalachian Oak Products

The following items are available in *Appalachian Oak* through local woodwork and other firms specializing in these various products:

Interior Trim, Cabinet Work, Stair Cases, Panels, Doors, Flooring, Carvings, and Timbers

For ultimate satisfaction, specify "Appalachian" for all Oak architectural woodwork and Oak Flooring

Special Note: Information on Appalachian Ash, Basswood, Beech, Birch, Cherry and Maple lumber, as well as on Oak, Beech and Maple flooring, will be furnished gladly upon request.

APPALACHIAN CHESTNUT

For Distinctive Paneling

A combination of beauty of grain and color, excellent working and staying qualities, in addition to other admirable characteristics, makes Appalachian Chestnut an unsurpassed wood for the production of inexpensive paneled walls and other interior as well as exterior purposes.

Chestnut Inexpensive

The intrinsic worth of Chestnut for both cabinet and general utility purposes is considerably above the value indicated by current prices. The average market price of Chestnut lumber is approximately 25% under quotations of Appalachian White Oak of equivalent grades.

Availability of Chestnut

Authoritative estimates place the stand of Chestnut timber at 8 to 10 billion board feet with a normal annual cut of around 200 million board feet. The supply of good Chestnut lumber available today, notwithstanding the chestnut blight, is sufficient for all present requirements.

Stability

The outstanding property that makes Chestnut most suitable for wall surfaces, both in boards of random width and the usual type of paneling, is its *ability to stay in place.* The U. S. Forest Service gives Chestnut the *highest rating of all* commercial hardwoods in ability *to resist shrinking and expanding* after being properly seasoned. Chestnut is moderately strong and light in weight, (2.5 lbs. per board foot, kiln dried) seasons and works readily, nails easily, glues well and is very durable.

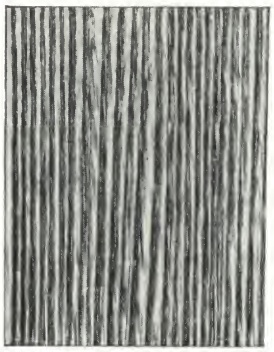
Grades, Effects, Sizes

Chestnut lumber is available in standard hardwood grades and sizes. From these grades several interesting decorative effects can be obtained, three of which are illustrated in the panels below. These effects are furnished only in *plain sawn* lumber for paneling of either random-width boards or the conventional type. The cost of installing random-width board paneling in the three effects illustrated is approximately the same for each type and 15% under the cost of similar grades of Appalachian Oak.

The clear grade of Chestnut paneling is furnished in *two* grain patterns, *plain sawn* and *rift sawn, illustrated* by the two small panels. *Rift sawn* is approximately 20% higher in price.

Rough Chestnut lumber is cut principally in 1 in., 1¼ in., 1½ in., and 2 in. thicknesses; in width from 3 in. to 17 in., with 80% 3 in. to 12 in. and 20% 12 in. and over. Use of random widths from 5 in. to 12 in. in board paneling is *more economical* than the use of specified widths. Standard maximum length 16 ft. Structural material for posts and beams is cut on specification.

Plain sawn (flat-grain) Chestnut paneling available in the three effects illustrated below



Rift-sawn (comb-grain) Chestnut available in *Clear* and *Clear except for worm holes* paneling

Others Uses

Cores—The high resistance to shrinkage, expansion and warping, and its ability to take and hold glue well are qualities which make Chestnut *first choice* as a corewood for the manufacture of high grade panels, doors, and other large built-up wood surfaces. For this use no wood excels Chestnut.

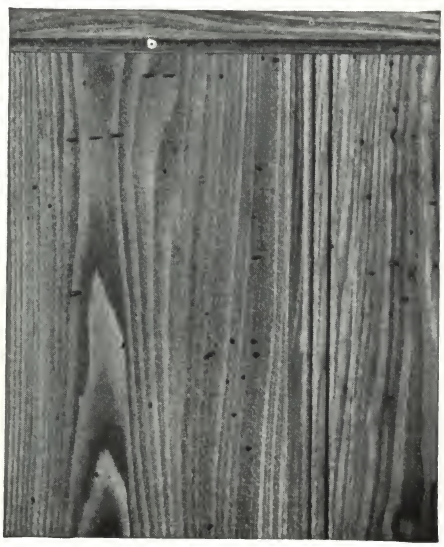
Half-timbering—Qualities of staying put, exceptional durability, light weight, and the prominence of its grain pattern, make Chestnut ideal for half-timbering, beams and posts. Rains will cause soluble substances in Chestnut to leach out and stain stucco and stone work unless *before erection all surfaces* are given a thorough application of raw linseed oil. A second coat of oil, colored if desired, should be applied to the wood after it is installed.

Exterior Woodwork — Chestnut is also ideal for exterior trim, doors, window sash, mouldings, frames for screen doors and screened porches, garage doors, and other portions of a building on which a natural or stain finish is to be used.

Our booklet, "Chestnut for Distinctive Paneling" will be mailed upon request.

THREE EFFECTS AVAILABLE FROM STANDARD GRADES OF PLAIN SAWN CHESTNUT

Clear Chestnut Paneling



Clear Except for Worm Holes

Antique or Knotty With Worm Holes

APPALACHIAN POPLAR

For Painted and Enameled Woodwork

Appalachian Poplar, sometimes *incorrectly* referred to as "Whitewood," is one of the most serviceable and dependable woods found in the United States. It has been prized as a superior building material since early Colonial days. Poplar timber reaches its maximum development in the Appalachian Mountains where the trees attain unusual size and yield lumber of excellent quality.

Poplar is the commercial name for the Tulip tree which is designated scientifically as *Liriodendrom Tulipifera.* Its wood is much superior to that of the Populus or true Poplar family,

Appalachian Poplar Woodwork
Illustration courtesy CHARLES F. CELLARIUS, Architect, Cincinnati

which includes such species as Lombardy, Black and Balsam Poplar, the Aspens, Cottonwoods, and others. By force of custom the lumber trade prefers to call the wood of the Tulip tree "Poplar," which term will be used in this description.

Availability

Hundreds of millions of feet of Appalachian Poplar lumber are manufactured annually and distributed through the usual channels to the trade. It is used by planing mills, cabinet makers and woodworkers interested in the manufacture of dependable building materials. Appalachian Poplar is readily obtainable by architects upon specification in practically every section of the country through their local woodworkers and retail lumber yards.

Characteristics

Appalachian Poplar has a straight, close, fine grain and uniform texture. It is moderately strong, hard, elastic and light in weight (2.5 lbs. per board foot) when kiln-dried. Its heartwood is greenish yellow in color and very durable when used for painted exterior millwork. The sapwood is white and less durable for exterior millwork but will give excellent service if kept thoroughly painted.

Appalachian Poplar seasons readily, works easily, nails and glues well, and is one of our *best* native woods to *remain in place* after being properly kiln-dried. This quality makes this wood the *first choice* for wide paneling, counter tops and other broad painted or enameled surfaces. Moreover, its ability to *take* and *hold* paint or enamel *is not excelled* by any other wood. Since early Colonial days Appalachian Poplar has been highly esteemed by builders for both exterior and interior woodwork. The splendid state of preservation of many of our beautiful, old, historical wood dwellings is due to the *durability* of their Appalachian Poplar siding, trim, window sash and casings, mouldings, columns, and other exposed parts and particularly to the *unexcelled paint holding* qualities of this wood.

Grades and Sizes

Appalachian Poplar is manufactured in all standard grades common to this species and in all sizes and for all purposes and effects of interest to the architect. From these grades and sizes material suitable for all kinds of woodwork is readily available through the local planing mills and cabinet makers.

Standard commercial thicknesses of Appalachian Poplar lumber range from ⅝ in. to 4 in. and in widths from 3 in. to 18 in. for lumber and 18 in. to 33 in. for panel stock, 33 in. being the usual maximum width. Standard maximum lengths 16 ft. Special stock is cut on specification.

Appalachian Poplar also is available in veneers of all commercial thicknesses and in cross-banding for panel cores, for which purposes this wood is considered the best.

Importance of Specifying "Appalachian"

While Poplar grows in several states and over a large area, its quality is not constant throughout its entire range. It shows a material diversity in texure, color, weight, working and staying qualities, depending upon the *locality of growth.*

The importance of the effect of growth-site conditions is readily discernible in the difference in color and in the working and staying qualities of the superior Poplar of the Appalachian territory as contrasted to Poplar grown outside this region. The variance in the qualities of Poplar, as in the case of Oak, is the result of *unlike climate* and *soil* conditions. Therefore, to be assured of obtaining Poplar possessing all the superior *working, staying* and *painting* qualities for which this wood is noted, specify *Appalachian Poplar.*

How to Specify

Architects in some sections specify Poplar as "Whitewood." Since there are several species of hardwoods much inferior to Appalachian Poplar yet somewhat similar in appearance which are being supplied under the name "Whitewood," it is recommended when the best results are desired that the specification read *"Appalachian Poplar."* This procedure will assure the architect of obtaining the genuine material. *Appalachian Poplar* is a standard trade name used by lumbermen, woodwork manufacturers and consumers for a long period of time and has been officially recognized as such by the U. S. Bureau of Standards in its Simplified Practice Recommendations on Lumber.

For fine enamel woodwork, specify *Appalachian Poplar, clear, except for mineral and sound stain and limited sapwood.* For the most economical grade of Poplar woodwork, specify *sound Appalachian Poplar without defects which cannot be easily covered with paint or enamel and which in no manner will affect the paint and enamel holding qualities of the wood.*

Appalachian Poplar Woodwork
Illustration courtesy DUNN AND COPPER, Architects, Cleveland

MAHOGANY ASSOCIATION, INC.

TELEPHONE
CENtral 8835

75 East Wacker Drive
CHICAGO, ILL.

What Is Genuine Mahogany?

Genuine Mahogany is derived only from several species of the Mahogany (Swietenoideae) tribe of the Mahogany family (Meliaceae), and is found only in the West Indies, America and on the west coast of Africa. No Mahogany grows naturally in any part of the Far East. Wood sold under the trade name "Philippine Mahogany" is not genuine Mahogany and is no more closely related botanically to genuine Mahogany than gum, birch or oak. Wherever there is any doubt as to whether the Mahogany supplied is in fact genuine Mahogany, samples may be sent to the Forest Products Laboratory of the U. S. Department of Agriculture, Madison, Wis., for identification.

West Indian Mahogany (Swietenia)—(Cuba, San Domingo, Haiti.) This is the hardest, heaviest, closest grained of all varieties of Mahogany, runs slightly richer and darker in color, comes from smaller, more defective trees and is specified where extra hardness or closeness of grain is desired.

Tropical American Mahogany (Swietenia)—(Mexico, Central America, South America, including Tabasco, Honduras, Nicaragua, Peru and the Amazon.) This variety is moderately hard and heavy but lighter in color and weight than West Indian. The trees are large and very free from defects.

African Mahogany (Khaya)—(Gold Coast, Ivory Coast, West Africa.) This variety averages lighter in weight and color and is not quite as hard or as close grained as American or West Indian. The trees are enormous and exceptionally free from defect. A very much larger proportion of the wood is figured than in other varieties.

Mahogany Lumber

For interior work and paneling American and African Mahogany are most frequently used, as these varieties are noted for fine lengths and widths and freedom from defects. Although Firsts and Seconds, in accordance with N.H.L.A. rules run 6 in. and wider, 8 ft. and longer; lumber 17 in. and wider is made, while, for special purposes, boards from 30 to 40 in. are available. Also lengths 17 ft. and up and even 25 ft. and up are produced. In thickness, stock up to 4 in. is regularly produced, and up to 6 in. is available.

Owing to the commercial availability and moderate cost of Mahogany lumber of good widths and lengths, solid Mahogany is frequently used in architectural woodwork and furniture. Mahogany is easy to work and scientific tests show that the wood shrinks less, expands less and warps less than any other fine cabinet wood in use today.

Figured Mahogany Lumber

Specially selected figured lumber is available in American and African Mahogany in grades of No. 1 Common and better. The premium for such stock is quite modest, and the lumber produces unusually beautiful cabinet work.

Mahogany Veneers

There is a great wealth of variety and figure in Mahogany. As is the case with lumber, lengths, widths and freedom from defect are characteristic of Mahogany veneers. No other cabinet wood offers the variety from which to make a selection. Many types are produced in quantity which makes possible large production cuttings of a uniform character of figure.

Standard sliced veneers are cut 1/28 in. thick. Sawn veneers most commonly are manufactured 1/20 in., 1/8 in., 3/16 in. and 1/4 in. thick. While other thicknesses can be obtained, these thicknesses offer by far the best selection. Where lengths greater than 16 ft. are required, it is necessary to use sawn veneers.

Mahogany Plywood

For information on Grade Rules, see Bureau of Standards document CS35-35 Plywood, Government Printing Office, Washington, D. C. Price 10c.

Quality in Cabinet Work

There are no official standards for fine cabinet work, but a safe rule is to employ a firm that has a record for doing fine work. On request, this office will supply a specimen specification form for Mahogany cabinet work.

Design in Mahogany

Through historical use and general acceptance, Mahogany is ideal for reproductions and adaptations of the 18th century masters. It is ideal for carving. With its rich, mellow appearance, beauty of grain and depth of figure, Mahogany also offers a striking medium for the sheer surfaces that are characteristic of Modern design. It is also ideal for combining with other fine cabinet woods such as satinwood or primavera. It is widely used for stair rails and doors with painted trim. Mahogany costs surprisingly little more than common woods.

Mahogany Finishes

Good finishing on Mahogany pays a large dividend in permanent satisfaction, while bad finishing may ruin the finest in design, material and workmanship. *Deep stains and high gloss surfaces should be avoided.* Factory-applied finishes under controlled conditions are superior to finishes applied on the job after installation. Modern technique in Mahogany finishes offers serviceable finishes that approximate the rich beauty so admired in many famous museum pieces.

These finishes, unstained or only lightly stained, ranging from sherry to a rich golden brown, flat or dull rubbed, bring out the full beauty of the wood. Such finishes permit the mellowing with age that is so pleasing in Mahogany. Bleached finishes or Blonded Mahogany are being used in modern designs.

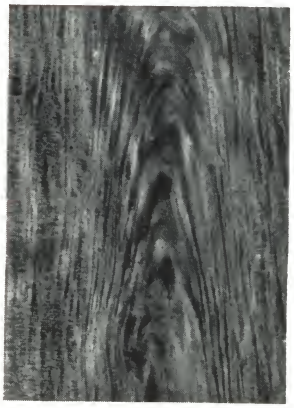
We will be glad to supply further detailed information. The "Mahogany Book" is now available—without cost.

"After All—There is Nothing Like Mahogany"

Crotch

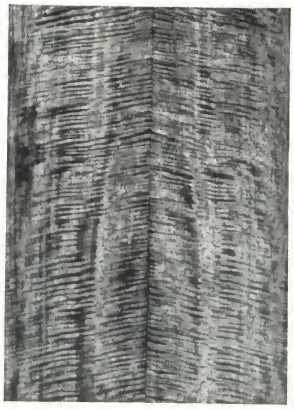
Swirl

Flat Cut

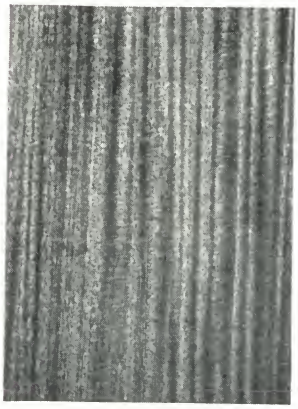


Figured Flat Cut

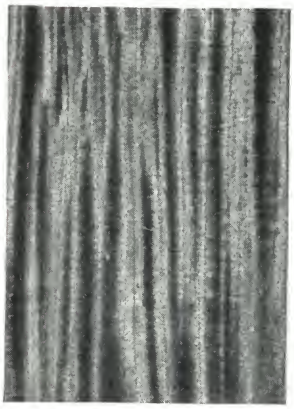
Mottle



Fiddle



Stripe



Broken Stripe

MAHOGANY DOORS

Panel Door

There is perhaps no richer or more interesting treatment on interior than to use rich Mahogany doors with painted woodwork or where woodwork has been eliminated, the light cream colored Georgian woodwork and panelling with panelled Mahogany doors is a classical style of rare beauty. There is no item in the woodworking field where the best materials and workmanship pay as big a dividend in satisfactory service as in doors of Mahogany. Mahogany, of all cabinet woods, is the least susceptible to atmospheric changes, therefore makes doors that keep their appearance and shape through the years.

Flush Door

PENROD, JURDEN & CLARK CO.

Manufacturers of American Walnut Lumber and Veneers, and Importers of Foreign Cabinet Woods

GENERAL OFFICES
KANSAS CITY, MO.

MILLS AND PLANT OPERATIONS: KANSAS CITY, MISSOURI, DES MOINES, IOWA, CINCINNATI, OHIO, AND NORFOLK, VIRGINIA

SALES OFFICES

KANSAS CITY, MO., Sheffield Station—American Walnut Lumber and Veneer

CINCINNATI, OHIO, St. Bernard—Fancy Veneer and Lumber, Domestic and Foreign

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EQUIPPED TO SUPPLY EVERY NEED OF THE ARCHITECT

American Walnut Timber

Carefully selected from first quality stock, obtained from the region of the best stands of Walnut Timber. Modern equipment and facilities in our plants for conversion, a skillful corps of workmen, and more than fifty years' experience of our supervising staff, is the guarantee for the high quality of our complete and diversified stock of Walnut Lumber.

With a well-organized Service Department, our business is operated for the purpose of supplying every need of the market at competitive prices.

Being recognized as the largest manufacturers of American Walnut, we are in a position to satisfy any of your requirements of lumber for interior trim, flooring and other sorts of woodwork.

American Walnut Veneer

We carry a complete stock of rotary, half-round, back cut, sliced, quartered, bastard and flat cut stumpwood, crotch and burl veneer of beautiful figure effects and of various colors and shades, carefully manufactured from the very choicest material.

In our stocks you will find many trees, the grain and markings of which will suggest new conceptions of design that will inspire the best of creative effort.

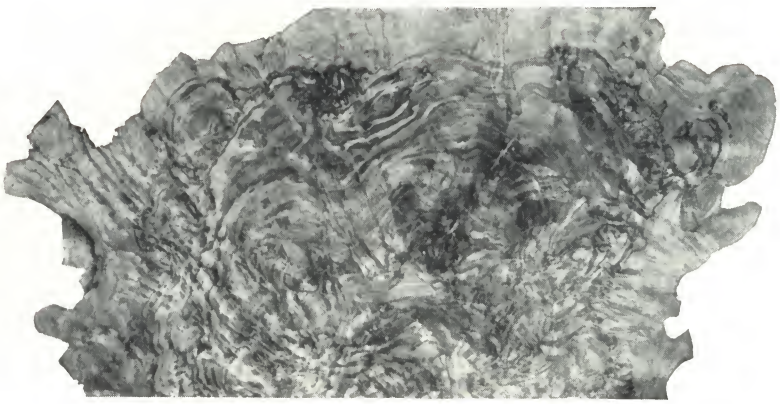
STANDS FOR QUALITY AND SERVICE

Full Feathered Crotch Walnut

Paneled Wall in the Library of a Residence in Kansas City, Mo.
Panels are American Walnut Crotch, Framed in Carved American Walnut
BRYANT FLEMING, New York, N. Y., Architect
Interior Woodwork by AMERICAN SASH AND DOOR CO.

Figured Half-round Walnut

We are particularly anxious for the Architects to consult us on the question of suitable woods in Veneer and Lumber for the *smallest* as well as the most pretentious residences. Thousands of new residences are going to be built in the next five years.



Panelling must play a prominent part for decorative purposes; no substitutes can replace the living beauty of the *natural product.*

At left:

English Brown Oak Burl

One of the finest veneers for interior wood work, manufactured by Penrod, Jurden & Clark Co.

FOREIGN WOODS

We are continually adding to our complete line of the most acceptable foreign woods. Our representatives in Australia, Europe and the Far East are instructed to purchase only very outstanding trees noted for special markings and size. No expense or money is spared to continually replenish our stocks. Only in a few cases middlemen are employed, the greatest part of our imports are from the Virgin forest. They are unloaded from boats directly to our Norfolk, Virginia, Plant, thus eliminating all useless freight charges and handling.

You are cordially invited to visit this modern plant at Norfolk and also the attractive up-to-date Show Rooms in Cincinnati, Ohio, where a great many finished panels on display show what can be done with Foreign Woods.

With the present modern trend for interior decoration and furnishings, these Foreign Woods are very essential in the Architects' schemes.

Very Light

Ash
Aspen
Avodire
Ayous
Bella Rosa
Birch, Finnish
Harewood
Maple
Prima Vera

Light

Allacede
Framire
Greywood
Kambala
Lovea
Movingui
Narra
Oak, American
Oak, Russian
Pearwood
Padauk, Burma
Satinwood, East Indian
Sycamore
Tamo
Zebrano

Brown

Ebony, Macassar
Goncalo Alves
Imbuya
Koa
Laurel, Indian
Laurack
Oak, English Brown
Orientalwood
Paldao
Teak
Walnut, Circassian
Walnut, English
Walnut, French
Walnut, Italian

Black

Ebony, Gaboon
Ebony, Kribi

Picture designed by Nyholm & Lincoln

Maidhu Burl Furnished for One of New York's Fashionable Stores

Veneer produced and manufactured by Penrod, Jurden & Clark Co.

Pinkish-Red

Bosse
Bubinga
Cherry
Mahogany, African
Mahogany, Cuban
Oak, Australian Silky
Padauk, African
Padauk, Andaman
Rosewood, Brazilian
Rosewood, East Indian
Rosewood, Madagascar
Sapeli
Tulipwood

Burls

Ash
Elm, French
Maidhu
Maple
Madrone
Olive
Myrtle
Poplar
Redwood
Thuya
Walnut, Circassian
Walnut, French

Crotches

Avodire
Mahogany
Rosewood, Brazilian
Walnut, Circassian, French

Stumpwood

Ash
Maple
Walnut, French, Circassian, Turkish

Swirls

Ash
Mahogany
Oak

WESTERN PINE ASSOCIATION

Soft Textured Pine Lumber, Lath and Woodwork

Yeon Building, PORTLAND, OREGON

MEMBERS' SALES OFFICES, JOBBERS AND DEALERS IN PRINCIPAL CITIES

Products

PONDEROSA PINE LUMBER.
IDAHO (Genuine) WHITE PINE.
SUGAR (Genuine White) PINE.

For exterior and interior finish, mouldings, siding, house framing, boards, window frames, sash, doors, porch columns, paneling, stair and cabinet work.

Also Larch and/or Douglas Fir, White Fir, Red Cedar, Incense Cedar and Engelmann Spruce.

Sold Throughout the United States

Western soft textured pines are available in all sections of the United States in the form of yard lumber and fabricated building products. They can be procured from retail lumbermen, planing mills, jobbers and sash and door manufacturers.

Supply

Adequate lumber is on hand at all times at distributing points and mill storage yards to take care of building needs in western pines. Bureau of Census figures show actual annual production of Ponderosa Pine has totaled about 3,000,000,000 feet, Idaho White Pine 525,000,000 feet and Sugar Pine 300,000,000 feet. Each wood is backed by large reserves of old growth timber, which with the new growth that is added each year insure a continuing production of lumber; in fact, no other woods of commercial importance promise as permanent a natural supply.

Association Membership and Services

One hundred fifty pine manufacturers, located in Arizona, California, Colorado, Idaho, Montana, New Mexico, Oregon, South Dakota, Washington and British Columbia, having common manufacturing problems and timber species, have associated themselves together to promote efficiency in manufacturing, uniform grading and the dissemination of information which will assist architects, builders, fabricators, dealers and consumers in all matters relating to the proper use of the woods listed above.

Lumber sales are handled by the individual member mills and their agents throughout the nation. The Western Pine Association will gladly assist buyers in locating a nearby distributor of these woods.

Grades, Sizes and Seasoning

The lumber produced by these Association mills is uniformly graded in accordance with published rules of the Western Pine Association and is furnished in sizes which are in close conformity to American Lumber Standards. The mills employ expert graders of certified ability. Their work is checked currently by experienced lumber inspectors of the Association, thus assuring to purchasers of these woods, lumber of uniform manufacture and quality. The pine species are segregated into three grades of finish and five grades of boards, permitting a wide choice of material, each grade of which is restricted to relatively narrow limits of quality variation. The stock is carefully seasoned in the air or in dry kilns, is surfaced to uniform sizes *after* seasoning, and from the moment it is shipped from the mills is fitted for use in building.

WPA MILL 12 | SEASONED - 2 BDS. PONDEROSA PINE

Soft Pine Columns and Entrances Impart Beauty and Dignity to Exterior Work

Trade and Grademarked Lumber

Specifiers of lumber can protect their clients against substitution by including in the specifications the requirement that all stock which is purchased shall be marked with (1) the symbol of the Association under whose rules it is graded, (2) the manufacturer's mark, (3) the Association grade name and (4) the species name. These elements are included in the typical mark (see illustration) used by Western Pine Association mills, when stock is so ordered.

Specification Writing

Care should be taken in writing specifications for lumber to have them conform to the grade names and species names used by manufacturers of these products. When special stock is required, the quality and kind that is wanted should be clearly described. If special patterns are called for, detailed drawings should be furnished the shipper. The Western Pine Association will send to established architectural firms and contractors, upon request and without charge, booklets about its species. In these publications, information is given about the properties, uses and grades of each wood, including photographs of the standard grades. When writing, please state the species on which the information is wanted.

Ponderosa Pine (Pinus ponderosa)

Physical Properties and Appearance—The physical properties of Ponderosa Pine and the uses to which it is commonly put align it with the White Pines. It is produced in commercial quantities in most states west of the Rocky Mountains. The wood is distinguished by its light color, soft, even texture and good working qualities. The grain of the wood is only slightly discernible, the wood nails easily without splitting, takes and holds paint well, is light in weight, and has all of the qualities required of a wood suitable for high quality finishing uses.

Uses and Characteristics—A comparatively large proportion of the log is cut to factory lumber. For more than thirty years, Ponderosa Pine has been the leading wood for sash, doors and frames, and through all these years it has served these uses satisfactorily. It is, therefore, not a new or untried material, neither is it one that has been found lacking in the essential requirements of the service.

Another important use of Ponderosa Pine is for mouldings. Its soft texture, slight shrinkage and good nailing properties permit the wood, even in very small sizes, to be worked to intricate patterns with sharp, clean cut edges and contours. It is very satisfactory for all enameled work, and the wood's light color is of special advantage when light tints are to be applied.

Knotty Pine Has Deservingly Won Its Place in the Modern Home

Ponderosa Pine is one of few woods used for knotty paneling. Its satiny sheen, inconspicuous grain and sound, tight red knots, which surface smoothly, account for its increasing use for paneling. Besides, the wood stains well and its light color blends effectively with the tan and brown tints so frequently preferred for this type of work.

The several board grades of Ponderosa Pine are put to many uses, important among which are shelving, drop siding, flooring, partition, concrete forms, and sheathing. Boxes and crates are an important industrial use.

Ponderosa Pine has a low density cell structure, making the wood an excellent insulating material against heat and cold, particularly when one considers also its strength, resiliency and good nailing properties.

It is economical to use this wood. For example, hinges and locks can be fitted and attached to Ponderosa Pine doors quickly, thereby lessening labor costs. The doors stay put, wear well, and are easy to operate due to their light weight. Ponderosa sash can be fitted and weatherstripped at low cost. All Ponderosa Pine woodwork is a time-saver for the carpenter because of its easy cutting, shape holding and good nailing properties. The wood readily fulfills the requirements of most building needs.

Idaho (Genuine) White Pine—(Pinus monticola)

Physical Properties and Appearance—The fact that Idaho White Pine is a genuine White Pine means much to the architect or builder who is familiar with the many fine qualities of White Pine, which wood, for centuries, has been considered the choicest among all softwoods used in building construction.

There are three genuine white pines of commercial importance in the United States—Northern White Pine (Pinus strobus), Sugar Pine (Pinus lambertiana), and Idaho White Pine (Pinus monticola). So nearly alike are the physical properties of these three woods that expert wood technologists state "there is absolutely no positive means of identifying the three white pines one from another microscopically."

Idaho White Pine is produced mostly in Idaho, Washington and Montana. It is noted for its very soft, uniform texture, and slight grain. The difference in cell wall thickness between the relatively thinner celled springwood and the thicker summerwood is so slight as to be imperceptible. The wood is light colored, free from pitch and oils which discolor paint, shrinks little, nails easily without splitting, is straight grained, light to handle, and easily worked.

Uses and Characteristics—Idaho White Pine trees are smaller on the average than Sugar Pine and yield a high percentage of small, sound, tight knotted boards the equal of which is seldom found in any wood. The lumber is excellent for insulating purposes because of its strength, good nailing properties and very low density cell structure. White Pine has a long record of resistance to weathering and decay. The number of early New England dwellings that are still in use is proof positive of the wood's value for work exposed to the weather. For cornice and porch work, siding, windows, doors, frames and trim, Idaho White Pine serves every need. On the interior, it is used for the very finest stair work, mantels, cabinet work and enameled finish. When selected for knotty pine interior finish, it is without a peer. In fact, Idaho White Pine is a credit to the architect and the builder, wherever it is used.

Sugar Pine (Genuine White Pine)—(Pinus lambertiana)

Physical Properties and Appearance—Sugar Pine, the largest of all the pines, is a true White Pine that is native to California and southern Oregon. Its tall cylindrical trunk, free of branches for some distance from the ground, yields a high percentage of clear lumber. It is not uncommon in this wood for finish and factory lumber to be cut in wide, thick pieces measuring up to as much as 16/4 inches in thickness, many entirely clear in quality. The average Sugar Pine log also produces a large proportion of factory lumber, suitable for remanufacture into window frames, doors, sash, screens and similar fabricated products.

Uses and Characteristics—Sugar Pine is prized for its soft, easy-cutting texture, its straight grain, and its shape holding qualities. It is an important species for foundry patterns, one of the most exacting of all uses for wood. Capital decorations, ornamented mouldings, wood carvings, and wood turnings of all sorts are easily and accurately reproduced in this wood. Furthermore, Sugar Pine shows no tendency to split in nailing and is quickly installed by the carpenter. It resists weathering and decay, and has proven beyond question, through years of service under varying climatic conditions, its superior qualities for all exterior work, as for siding, porch and cornice work, mouldings, columns, balusters, porch floors and ceiling. Sugar Pine absorbs paint evenly and holds it without the paint film peeling or becoming wavy from raised grain. The good painting qualities of the wood are attributed largely to its soft texture, light color, slight shrinkage and freedom from resinous substances and oils which discolor paint or cause it to peel. For the same reasons, Sugar Pine is an excellent wood for the very best interior enameled work. On even the most difficult design or assembly jobs, the wood can be used with confidence that it will measure up to the requirements of the use.

Literature and Installations

The WESTERN PINE ASSOCIATION, Yeon Building, Portland, Oregon, will assist architects and builders on any problems concerning the use of its products, and will supply samples and literature on request. Also, it will furnish a list of installations where Ponderosa Pine, Sugar Pine and Idaho White Pine products have been successfully used.

As Has Been Wisely Said, "Always Select the Soft Pines for All Enameled Work"

SOUTHERN PINE ASSOCIATION

Interstate Bank Building
NEW ORLEANS, LOUISIANA

Purpose

A trade organization conducted by the representative manufacturers of Southern Yellow Pine for the maintenance of standard grading and inspection service, technical research, dissemination of authentic architectural and engineering data, and for trade promotion.

Products

Southern Pine lumber products in all items from structural timbers to flooring, interior finishing and mouldings.

Origin

Produced from Southern Pine timber growing in the States of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North and South Carolina, Oklahoma, Tennessee, Texas and Virginia, by more than 250 manufacturing enterprises whose owners compose the membership of the SOUTHERN PINE ASSOCIATION.

Availability

Immediately available in adequate assortment and supply, through local stocks and convenient service of retail lumber dealers and millwork houses anywhere in the United States, east of the Rocky Mountains.

In other regions where not usually carried in local stocks, the SOUTHERN PINE ASSOCIATION will, upon request, arrange for filling specifications.

SOUTHERN PINE IS A GRADE-MARKED MATERIAL

Southern Pine is graded and classified according to Standard Specifications developed and supervised by the Association. These grades adhere to the provisions of the American Lumber Standards. The grade classifying each piece of Southern Pine is plainly marked upon it in the manner illustrated on this page. This symbol shows (from left to right) the number of the Association mill manufacturing it, the Association's own initials certifying to its jurisdiction of the grading, and the grade itself.

Grade-marking is a protective practice instituted and policed by the SOUTHERN PINE ASSOCIATION. License to grade-mark under Association regulations is extended only to those subscribers whose plants and products are representative and whose grading is accurate.

The grade-marking of Southern Pine is practiced for the direct benefit of the specification writer and the mutual protection of the manufacturer and ultimate consumer. It prevents substitution by distributors, of inferior, unidentified material originating at sources which do not adhere to the high manufacturing standards which prevail at all licensed SOUTHERN PINE ASSOCIATION mill operations. The mark signifies more than an individual manufacturer's conception of what quality a grade ought to be. Actually, it signifies the entire industry's composite, established standard of what each grade should provide and, through the Association's own Grading and Inspection Department, maintains the integrity of each grade by constant and meticulous supervision at the point of manufacture.

It is the function and intention of the SOUTHERN PINE ASSOCIATION to assist the architect and his specification writer in acquiring a thorough working knowledge of Southern Pine grades and uses to which each is properly adapted.

To that end, every subscriber to SWEET'S is invited to write the Association for a copy of its Standard Specifications for Grades which will be mailed promptly (see No. 8 below).

New Architects' Specification Manual for Residential Construction

For the use of Southern Pine lumber in residential construction, the Association has published a special manual of simplified practices and specifications. Information and data are provided on the following subjects:

Lumber Specifications for Various Uses
Construction Specifications
Size of Floor Joists
Density
Seasoning to Prevent Shrinkage
Grade-Marking
Termites
Standard Thickness and Width
Description of Grades
End Matched Lumber

The specification writer, by using the information provided in this manual, and designating that only material shall be used which bears the Grade-Mark of the Association stamped on each piece, will be assured of lumber products strictly in accordance with his requirements.

Publications and Reference Data

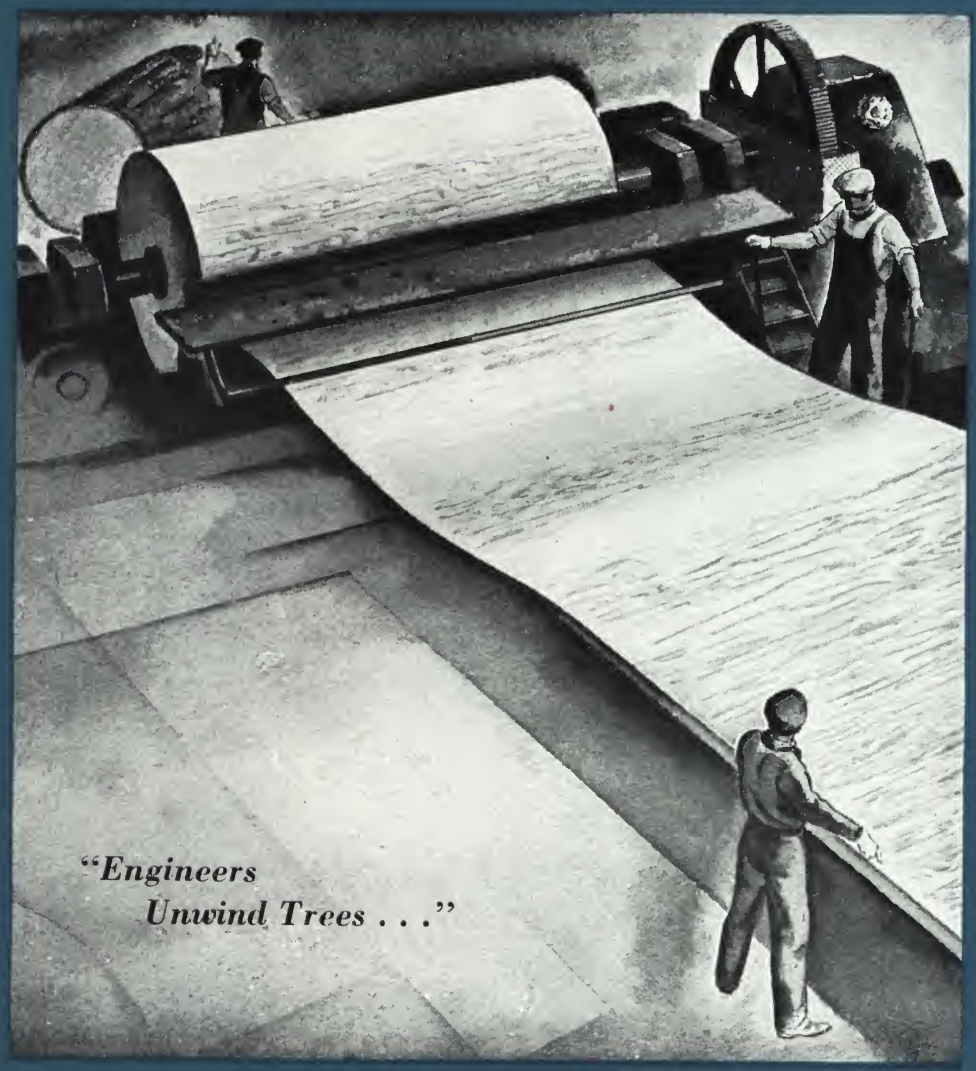
The following literature on Southern Pine is available to the profession, without charge:

(1) Architect's Specification Manual for Residential Construction (see above). A.I.A. File 19A-22.
(2) Specification and Engineering Manual on Structural Grades of Southern Pine.
(3) Bulletin on Termites.
(4) Bulletin on Distillery Warehouses.
(5) Fifteen Cardinal Points of Correct Frame Construction for Homes.
(6) Standard Wood Mouldings.
(7) Southern Pine Manual of Standard Wood Construction ($1.50).
(8) Standard Specifications for Grades of Long Leaf and Short Leaf Southern Pine Lumber and Timbers.

In addition, the SOUTHERN PINE ASSOCIATION offers the architectural profession the services of its technical research, and invites inquiry relative to any phase of Southern Pine usage, specifications, grades and construction.

Address: Southern Pine Association, Interstate Bank Building, New Orleans, Louisiana.

Facts about DOUGLAS FIR PLYWOOD



DOUGLAS FIR PLYWOOD ASSOCIATION

RESEARCH AND ADVERTISING HEADQUARTERS
SIXTH FLOOR, SKINNER BUILDING, SEATTLE, WASHINGTON

DOUGLAS FIR PLYWOOD ASSOCIATION

RESEARCH AND ADVERTISING HEADQUARTERS
Sixth Floor, Skinner Building, Seattle Washington

The Association

A non-profit organization of all United States manufacturers of Douglas Fir Plywood, founded to sponsor a continuing program of technical research, to promote the use of this material in construction and industry, and to help users employ it to the best advantage.

Inquiries as to the characteristics or uses of Douglas Fir Plywood will receive the prompt attention of our Research Director. Address DOUGLAS FIR PLYWOOD ASSOCIATION, Research and Advertising Headquarters, Dept. 136-Z, Skinner Building, Seattle, Washington, or any of the following member mills:

ABERDEEN PLYWOOD COMPANY
Aberdeen, Washington
AIRCRAFT PLYWOOD CORPORATION
Seattle, Washington
BUFFELEN LUMBER & MFG. CO.
Tacoma, Washington
CAPITOL PLYWOOD CO.
Olympia, Washington
ELLIOTT BAY MILL COMPANY
Seattle, Washington
HARBOR PLYWOOD CORPORATION
Hoquiam, Washington
HENRY McCLEARY TIMBER CO.
McCleary, Washington
M & M PLYWOOD CORPORATION
Longview, Washington
OLYMPIA VENEER COMPANY, INC.
Olympia, Washington
OREGON-WASHINGTON PLYWOOD CO.
Tacoma, Washington
PETERMAN MANUFACTURING CO.
Tacoma, Washington
THE PLYLOCK CORPORATION
Portland, Oregon
ROBINSON MANUFACTURING CO.
Everett, Washington
VANCOUVER PLYWOOD & VENEER CO.
Vancouver, Washington
WASHINGTON VENEER COMPANY
Olympia, Washington
WHEELER OSGOOD SALES CORPORATION
Tacoma, Washington

● THE PRODUCT

Douglas Fir Plywood consists of an odd number of thin sheets, or veneers, of selected old-growth Douglas Fir—3, 5, or 7 in standard thicknesses—these being laminated with alternating grain direction. The major processes of manufacture are illustrated on this page.

The water-resistant glue used, after setting under hydraulic pressure, forms a bond of high shear strength, far stronger, in fact, than the wood fibers themselves.

In the manufacture of Douglas Fir Plywood, only the choicest Douglas Fir logs are used. These are the so-called "peeler" logs, which are less than 10% of the total production of Douglas Fir logs. Douglas Fir grows on the Pacific slope, where climatic conditions produce a wood combining soft texture and light weight with extraordinary strength. Because of these characteristics, Douglas Fir is widely specified for heavy structural timbers.

● PHYSICAL CHARACTERISTICS

(Test Data on Pages 7, 8 and 11)

Because the veneers are rotary-cut, not sawn, Douglas Fir Plywood is available in standard sizes as large as 4 x 8 feet—and in even larger sizes on special order. Largely because of these sizes, Douglas Fir Plywood makes possible savings of 40% to 75% over ordinary lumber in handling and labor costs.

Because the grain of each ply composing the material is at right angles to the grain of adjacent plies, the strength of a Douglas Fir Plywood panel is approximately equal in both directions. By contrast, the tensile strength of ordinary lumber may be twenty times as high parallel to the grain as across it, and the modulus of elasticity from fifteen to twenty times as high. Therefore, a panel of Douglas Fir Plywood will do the work of solid lumber very much thicker and heavier.

Because of its nearly equalized shear strength, Douglas Fir Plywood has no plane of cleavage. Hence it cannot be split except by extraordinary force. For example, it is practically impossible to split even a small piece with a hatchet or axe. Nails and screws can be driven almost at the very edges.

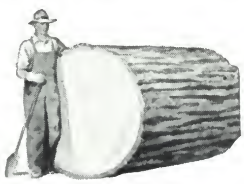
As each veneer, or ply, is scientifically dried before the gluing process, and as any tendency of an individual ply to shrink or expand is prevented by the opposing grain of adjacent plies, Douglas Fir Plywood is extraordinarily warp-resistant. Once in place, it is *warp-proof*.

Its light weight is demonstrated by the fact that a cubic foot of ⅜-in. 3-ply of 10% moisture content—for example—weighs only 34 lbs.

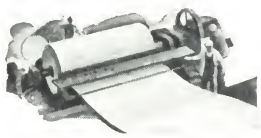
Douglas Fir Plywood comes sanded to satin-smoothness, reducing labor costs at the point of construction.

To summarize, Douglas Fir Plywood combines the good qualities of lumber with the convenience of wallboard size, yet is far stronger than *either* lumber or composition wallboard.

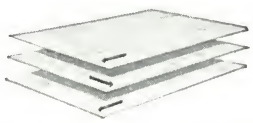
How Douglas Fir Plywood is made:



1 Selected Douglas Fir logs are cut to length and barked.



2 Then turned on a giant lathe and peeled off into endless lengths of thin wood sheets.



3 These sheets of wood are cut to size, laid cross-grain, and glued together flat with water-resistant glue under hydraulic pressure. (Arrows show direction of grain.)

4 The result is a new and better lumber having all the good qualities of natural wood plus the size and convenience of wallboard—but with advantages of strength, stiffness, and freedom-from-splitting which neither lumber nor wallboard has.

● AVAILABLE THROUGHOUT THE U. S.

Most progressive building material dealers in every section of the country stock Douglas Fir Plywood in an assortment of sizes and grades. However, if you are unable to obtain it in your community, write Douglas Fir Plywood Association, Research and Advertising Headquarters, Dept. 136-Z, Skinner Bldg., Seattle, Wash.

● PRICE

Douglas Fir Plywood is the least expensive of all water-resistant plywoods. In most thicknesses, it costs less per surface foot than equivalent ordinary lumber. It costs no more than composition boards. For example, the new ¼-in. Douglas Fir Plywood Wallboard retails for around 4 to 7c a sq. ft., depending on quantity and the dealer's freight cost.

Left: With Douglas Fir Plywood, the batten treatment of joints makes possible attractive and inexpensive walls and ceilings

Below: Stained and waxed, the natural wood grain of Douglas Fir Plywood Wallboard panels, adds distinctive charm to this living room

Below: Presumably an expensive plaster job, the walls and ceilings of this beautiful Colonial living room are actually made of damage-proof Douglas Fir Plywood, painted and stippled

● REPRESENTATIVE USES

Space permits mention of only a few of the hundreds of uses for which Douglas Fir Plywood's unique characteristics have won it acceptance.

Crack-proof Walls and Ceilings
Garages and Lining
Wainscoting
Concrete Forms
Subflooring
Dust-proof Drawers and Drawer Bottoms
Booth Paneling
Bulletin Boards
Breakfast Nooks
Dust-proof Coal Bins
Store Fixtures
Clothes Chutes
Portable Houses
Cupboards
Automobile Body Parts
Freight Car Lining
Boxes and Crates
Radio Cabinets
Modern Furniture
Kitchen Cabinets
Window Seats
Ironing Boards
Window Valances
Wardrobes
Office and Other Partitions
Shelving
Closets
Bins
Bookcases
Screens
Cabinets
Sheathing
Lockers
Porch Sun Rooms
Squeakless Flooring
Table-tennis Tables
Desks
Tables
Window Displays
Bread Boards
Chests
Benches
Medicine Cabinets

● CRACK-PROOF WALLS AND CEILINGS

Used for walls and ceilings, Douglas Fir Plywood gives crack-proof strength and a smoothly sanded natural-wood surface that takes *any* finish—natural-grain, paint, plastics or paper. Being both low in surface-foot cost and repair-free, this versatile material is more economical in the long run than lath-and-plaster, solid-wood paneling, or any composition wallboard.

As an insulating material Douglas Fir Plywood is at least 20% superior to ordinary lumber. The big panels reduce to a minimum the lineal footage of joints—and these joints *stay tight*—permanently proof against air infiltration, thus providing also the valuable insulation of dead air space.

The new ¼-in. Douglas Fir Plywood Wallboard is the most widely used grade and thickness for walls and ceilings. For especially substantial construction, ½-in. or even thicker is sometimes used.

As Douglas Fir Plywood is *real* lumber, not a composition material, it cannot budge, sag or crumble. Leaking roofs or plumbing will not discolor Douglas Fir Plywood walls except under extreme conditions.

Below: Note the unusual effect obtained in the ceiling of this modern room by using a stenciled design on panels of Douglas Fir Plywood. The walls and built-ins are also of Plywood

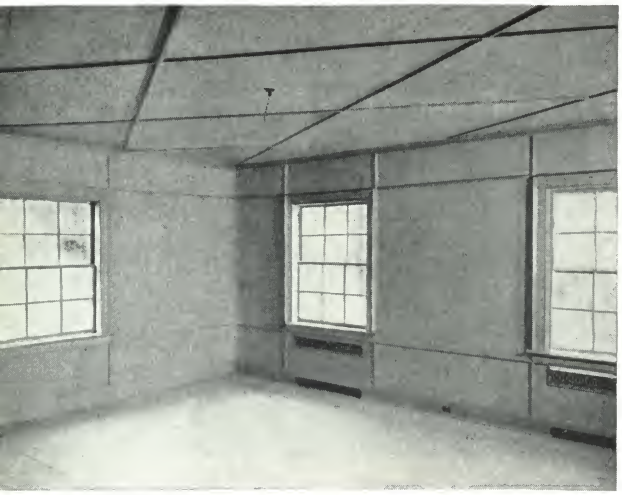
● WAINSCOTING

Both because Douglas Fir Plywood combines low surface-foot cost with labor-saving sizes, and because it lends itself to so many attractive finishes, this material is increasingly preferred for wainscoting.

Right: Because it stands the hardest kind of wear and tear without cracking or splitting, Douglas Fir Plywood is the ideal material for recreation room walls and ceilings

Below: This new ¼-in. Douglas Fir Plywood Wallboard can be bent without steaming to form the pleasing curves of a stair well

Below: Below are the unfinished walls and ceiling of a bedroom which will never crack nor crumble. And this attractive method of batten treatment at joints is surprisingly inexpensive



Below: For decorative treatment Douglas Fir Plywood suggests limitless possibilities as it takes any stain, paint or plastic finish. This photograph illustrates the bedroom shown above, after finishing

● PARTITIONS

Douglas Fir Plywood's great strength and giant panel sizes make it an ideal material for partitions. It is labor-saving and damage-proof. Unlike partitions of composition board or plaster, the strength of which is primarily in the framework, Douglas Fir Plywood partitions are homogeneous structures extraordinarily resistant to all stresses.

A plywood partition—if not less than ½-in. thick—requires no studding, simply a cap and shoe.

Douglas Fir Plywood is an ideal material for removable partitions, because of the large units. Also, Douglas Fir Plywood partitions can be dismantled easily for the same reason, and the remarkable strength of the Plywood minimizes damage to it when this is done.

● SUBFLOORING AND FLOORING

For subflooring, or for flooring to be covered by carpet or linoleum, Douglas Fir Plywood offers a combination of economies and other advantages not otherwise obtainable.

The huge panels save at least 60% in flooring and subflooring labor, by minimizing the work of sawing, fitting, joining and nailing. The great reduction in lineal footage of joints, and the fact that plywood joints will not open, practically eliminates air leakage. And, in addition, Douglas Fir Plywood is approximately 20% more effective as an insulator than ordinary lumber.

Used as subflooring, Douglas Fir Plywood contributes much greater structural strength than ordinary materials. The ¾-in. thickness is most often used for subflooring.

Finally, Douglas Fir Plywood floors and subfloors tend to *prevent squeaking,* because this material grips nails more tenaciously than ordinary lumber and because the thicker panels do not yield under the weight of a person walking.

Not being lapped at the edge, every square inch of Douglas Fir Plywood covers surface. This means a 20% saving over shiplap subflooring in material footage alone.

Douglas Fir Plywood is also used, as in an auditorium or convention hall, to protect permanent flooring while the building is being used for sporting events or similar gatherings. The large lightweight sections can be laid down or taken up quickly.

● SHEATHING

For virtually the same reasons that recommend it for subflooring—labor-saving, insulation, and greatly increased structural strength—Douglas Fir Plywood is far superior to shiplap for sheathing. The saving in labor amounts to approximately 60%.

As the extraordinary strength of this material is approximately equal in both directions, Douglas Fir Plywood sheathing provides far greater rigidity than expensive diagonal bracing—yet without extra labor or materials.

Douglas Fir Plywood sheathing is damage-proof and will withstand terrific strain. We quote from a report covering dynamic and static tests made at Stanford University and conducted by Lydik S. Jacobsen, Associate Professor of Research. In these tests four types of materials were used: two of the best known composition boards, Douglas Fir Plywood and one of solid lumber. ¼-in. plywood was used in these tests because thicker stock in the other products used for comparison was not available. ⅝-in. or ¾-in. plywood is recommended for sheathing, and, had these thicknesses been used throughout, comparisons would have shown an even more favorable result for plywood.

"For purposes of sheathing closed panels (sections) to resist seismic loads with a minimum distortion of nailed joints, the ¼-in. plywood is decidedly superior to any of the other forms of sheathing.

"In the static tests following the dynamic, panels (sections) sheathed with ¼-in. plywood are decidedly superior to panels sheathed with any of

the other forms of sheathing in regard to minimum elastic distortion, maximum load, maximum stiffness recovery, and maximum resilience for a given distortion of 1.5 inches.

"Closed panels (sections) with the three forms of ¼-in. sheathing give much greater dynamic and static rigidity than the ordinary $\frac{7}{16}$ x 3 Pine diagonal sheathing.

"Only in the case of the panels with ¼-in. plywood sheathing did the sheathing itself suffer no damage. If the frames had been made of stronger material than clear pine, the plywood panels would have shown greater stiffness and strength both dynamically and statically. The nail holding power of the frame studding seems to be the limiting factor of these panels.

"The light weight of the ¼-in. plywood panels constitutes an additional factor of safety if the structure is subjected to dynamic loads of seismic origin."

● USED AS A CABINET LUMBER

Warp-proof Doors—Douglas Fir Plywood has long been widely used for door panels and for constructing dustproof flush doors. In both it combines lightweight strength with extraordinary warp-resistance, at modest cost. The construction of flush doors becomes a simple carpentry job with this material.

Closets, Cupboards and Cabinets—By eliminating piecing and fitting, Douglas Fir Plywood's large panel sizes greatly reduce the cost of this kind of construction, besides giving it split-proof, warp-resistant strength. Cabinet drawers, bins and doors made of Douglas Fir Plywood will never stick, and the joints remain permanently tight and dust-proof. Nails and screws can be placed close to the edges without danger of splitting.

Shelving and Bookcases—Warp-proof, split-proof shelving and bookcases can be built with Douglas Fir Plywood for even less than if ordinary lumber were used. Moreover, plywood shelving can be thinner—more graceful in appearance—without sacrifice of strength.

Breakfast Nooks and Other Built-ins—Damage-proof built-ins, breakfast nooks, ironing boards, window seats, etc., can now be built at considerably lower cost, with Douglas Fir Plywood. This is because it eliminates piecing and glue-up work, and because of the low surface-foot cost of the material.

Store Fixtures—Douglas Fir Plywood builds extra-strength, repair-free store fixtures at a lower cost than any other suitable cabinet lumber. Moreover, doors, drawers and bins of Douglas Fir Plywood keep merchandise dust-proof.

● FINISHING DOUGLAS FIR PLYWOOD

For Interior Use—

Priming—White and light-colored enamel finishes are best primed with equal parts of white lead, turpentine, and *boiled* oil or interior varnish. A primer especially effective to prevent checking of enamel may be prepared quickly from one part commercial shellac and six to eight parts of denatured alcohol. *Do not use gloss oil—it may yellow the finished surface.*

Priming coats should be applied either before the plywood is in place, or as soon afterward as possible, to prevent "raising" of the grain. However, a Swedish or hard-putty glaze over the primer will immediately level the surface again.

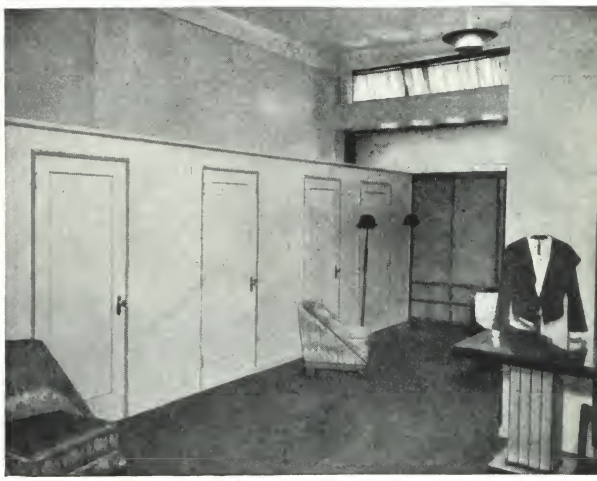
Room temperature for either varnish or enamel work should not fall much below 70 degrees.

Enamel Finishes—After priming, use two coats of any high-grade undercoater. For a fine four-coat surface, do not thin the final coat unless otherwise specified by the paint manufacturer. Use only tinting colors ground in oil, and tint the undercoats as well as the final enamel coat. The priming, second and third coats should be sandpapered, but on the last coat under the enamel only No. 00 sandpaper should be used. If an especially fine finish is desired, apply one or more extra coats, rubbing between coats with pumice and water. Rub the final coat with pumice and oil.

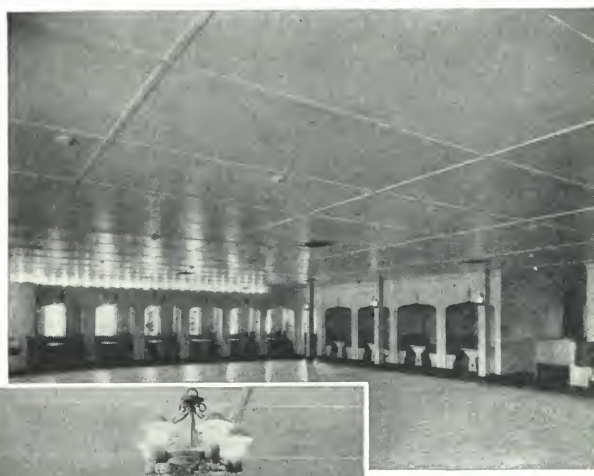
Painting and Staining—For ordinary purposes, finish Douglas Fir Plywood like any other wood. Beautiful soft stained effects ranging from blue grey to brown grey may be obtained with nigrosine and chloride of iron, the color intensity being regulated by the amount of water used in mixing. Further variations may be created by adding other acids. Finish with shellac and wax, varnish and wax, or other usual top finishes.

Above: Low surface-foot cost and resistance to warping and splitting make Douglas Fir Plywood the ideal material for restaurant and store fixtures

Below: Besides saving floor space this material saves construction time and costs much less than lath and plaster and may be finished to give exactly the same appearance



Below: For large areas, in public gathering places, where expense and durability are to be considered, Douglas Fir Plywood is invaluable. Besides their damage-proof strength, these giant plywood panels greatly reduce labor costs. The ¼-in. Douglas Fir Plywood Wallboard is easily curved without steaming to form the curved surfaces so often necessary in bars and fountains



Plastic Finishes—Prime as suggested for enamel finishes. Plastic finishes with either a water or oil-and-varnish base may be used. If haste is necessary, white shellac may be used as a substitute for the lead, oil and turpentine priming.

Glazed or Stippled Effects—Coat as suggested for enamel finishes, add the usual undercoats, then glaze or stipple. Staining colors ground in linseed oil may be used. Any of the usual solvents are satisfactory, with some oil or varnish for additional binder. Subsequent coats may be shellac and wax. The final coat should be rubbed with pumice and oil.

Sand-etched and Steel-brushed Effects—The distinctive grain of Douglas Fir Plywood lends itself perfectly to these beautiful new effects, in which a portion of the softer springwood is removed by sand-etching or by brushing parallel with the grain with flexible wire bristles.

For dark effects, use water stains or staining pigments ground in oil. Let the latter dry without wiping. After the stain has dried, apply a lighter-colored paste filler, let it set a short time, then wipe off.

This filler should be slightly darker than the stain-

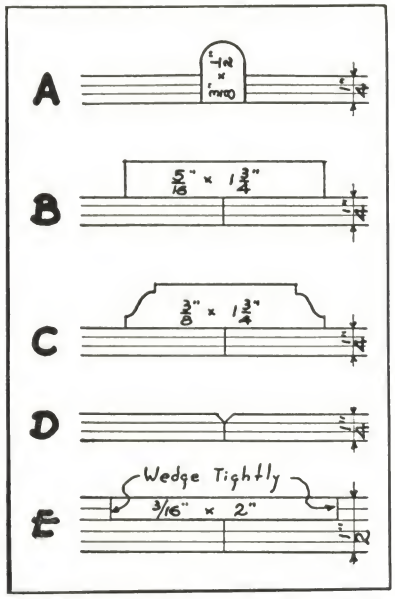
Five Typical Treatments of Joints

Although the usual practice is to cover the joints with battens—either of the plain flat type (B) or with battens having moulded edges, as in (C)—Douglas Fir Plywood's resistance to shrinking and swelling permits other joint treatments.

In (A) is shown the European vogue, in which a small bead, plain or decorative, is set between the panels.

The attractive V-joint shown in (D) also is used extensively. This joint is made by chamfering the edges of the panels slightly with a plane—after each panel is fitted but before it is fastened to the wall.

The joint treatment shown in (E) provides an absolutely flush wall, and for this purpose we recommend Douglas Fir Plywood not less than ½-in. thick. The edges of the panel or sections are rabbeted, and a thin strip one or two inches wide is wedged tightly and glued into place.



Right: When economical construction is important Douglas Fir Plywood will assure satisfaction. It costs less per surface-foot than ordinary lumber and saves 40 to 75% labor

Below: This photograph admirably illustrates Douglas Fir Plywood's remarkable versatility. The walls and ceilings, bins, cupboards, and cupboard doors, sink wings, built-in china and linen closet, and table top are all of this split-proof, warp-resistant lumber

Below: Exposed joints and a natural wood finish of these Douglas Fir Plywood walls combine to make a smart modern effect

Standard Sizes

Standard Widths—Beginning at 12 in., increasing by 2 in. units to 30 in., also 36, 42 and 48 in., or larger on special order. Wallboard widths, 32 and 48 in.

Standard Lengths—48, 60, 72, 84, 96 in., or larger on special order.

Standard Thicknesses—Beginning at $\frac{3}{16}$ in. 3-ply, increasing by $\frac{1}{16}$ in. units to $1\frac{3}{16}$ in. 7-ply, or thicker on special order. Wallboard thicknesses—$\frac{3}{16}$ in. unsanded and ¼ in. sanded 2 sides.

Note: On special order, Douglas Fir Plywood can be manufactured to your exact specifications—in special thicknesses, in special combinations of plies, in special shapes, drilled or specially treated.

Douglas Fir Plywood Grades

Good Two Sides (G-2-S)—This grade is intended for natural or light stain finishes. Both faces are clear and 100% heartwood of a yellow or pinkish color.

Good One Side (G-1-S)—One face is the same as that described under Good Two Sides grade, while the opposite face is the same as the Sound Two Sides grade described below.

Sound Two Sides (SO-2-S)—This grade presents a smooth, sound surface on both sides suitable for painting. The faces may be of one or more pieces of firm, smoothly cut veneer. If of more than one piece, they will be well-joined, edge-glued and reasonably matched for grain and color at the joints. Sap and natural discoloration are considered no defect.

Wallboard (W-B)—The face side is the same as described under the Sound Two Sides. The opposite side contains defects in number and size that will not affect the strength or serviceability of the panel.

Concrete Form Material—While various thicknesses are made on special order, two thicknesses are standard—⅝-in. and ¼-in. (after sanding). The ¼-in. thickness is recommended for curved forms and form lining. Panel faces are free from knots, open defects and sap, and are made with the most highly water resistant glue available. At additional cost panels will be treated at the mill with a satisfactory form oil (or other preparation).

Sheathing—Both faces of this 3-ply $\frac{5}{16}$ in. and $\frac{3}{16}$ in. unsanded plywood contain defects which will not seriously affect strength or serviceability.

ing or base color. Dark, bold effects, or the softest pastel effects can be achieved by varying the colors and treatments suggested above.

For Exterior Uses—

Edges and outside surfaces of plywood exposed to weather should be finished carefully with three coats of high-quality paint. In extremely damp localities, the interior should be coated also.

Priming — Without exception, ready-mixed paints used for priming should be reduced with pure raw linseed oil—usually with one gallon of oil to one of paint. Apply subsequent coats as the paint manufacturer recommends.

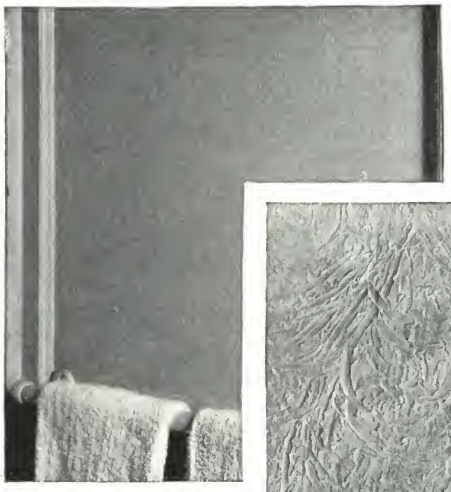
In mixing aluminum paint, which is especially moisture-resistant, use only high-grade vehicles—such as kettle-bodied boiled oil or long oil spar varnish. Do not use ordinary boiled oil or raw linseed oil. Many paint manufacturers now offer a vehicle specifically prepared for aluminum powder.

Methods of Application—On large unbroken surfaces, apply priming and subsequent coats like calcimine—sweeping the brush in semi-circular fashion. If the surface is small or broken by paneling, etc., follow the grain.

Use no turpentine or other thinner in the last coat. Use driers very sparingly, as they shorten the life of the paint. Ample time should be allowed between the priming and other coatings.

Stained Exteriors—Most oil stains on the market will give good results, but avoid those containing too much thinner. Job-mixed stains may be prepared with standard staining pigments and linseed oil or spar varnish.

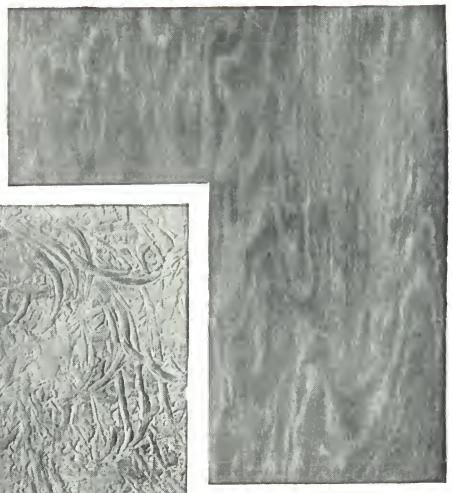
After the stain is dry, apply one or more coats of high-grade spar varnish. Never use shellac on Douglas Fir Plywood exposed to weather.



Paint Finish

Douglas Fir Plywood walls and ceilings may present either a paneled or a continuous surface. This real-lumber wallboard lends itself to a multiplicity of decorative treatments

Plastic Finish



Stain Finish

Douglas Fir Plywood can be painted, stained or treated with a plastic finish as shown here, or it can be waxed, enameled or lacquered. It can also be papered.

TEST DATA ON DOUGLAS FIR PLYWOOD

Because these tests results would be incomplete without some basis of comparison, five materials typical of those sometimes used instead of Douglas Fir Plywood were subjected to exactly the same tests—under exactly similar conditions. In fairness, letters instead of trade names have been used to designate these five materials. A and B are fiber insulating boards; C is a plaster board; D is a hard-compressed fiber board; and E is one of the old-style fiber wallboards.

A number of samples of each of these materials—and of Douglas Fir Plywood—were subjected to each of the following tests, to establish an average strength value that would be eminently fair.

The average moisture content of the Douglas Fir Plywood samples tested was 10%.

All these tests were made by the Northwest Testing Laboratory, which in the Northwest represents the nationally known Pittsburgh Testing Laboratory. A complete log of any test sent upon request.

TENSILE TESTS ON DOUGLAS FIR PLYWOOD

Dimension of Test Specimen			Area, sq. in.	Ultimate load, lbs.	Load, lbs., sq. in.
Thickness	Width, in.	Length, in.			
Load Acting with the Grain of Outside Plies					
3/4", 5-ply	3	18	2.250	8912	4074
5/8", 5-ply	3	18	1.875	8132	4350
1/2", 5-ply	3	18	1.500	8024	5135
3/8", 3-ply	3	18	1.125	5644	4750
1/4", 3-ply	3	18	0.750	5250	6484
3/16", 3-ply	3	18	0.562	4176	7901
Load Acting Across the Grain of Outside Plies					
3/4", 5-ply	3	18	2.250	8796	3932
5/8", 5-ply	3	18	1.875	8326	4491
1/2", 5-ply	3	18	1.500	7664	5108
3/8", 3-ply	3	18	1.125	4684	4141
1/4", 3-ply	3	18	0.750	2552	3291
3/16", 3-ply	3	18	0.562	1622	3016
TENSILE TESTS ON OTHER MATERIALS					
A .500	3	18	1.50	370	248
B .4375	3	18	1.20	152	126
C .250	3	18	0.75	264	352
D .195	3	18	0.585	1276	2180
E .190	3	18	0.570	1248	2189

Key: Materials A and B are fiber insulating boards. C is a plaster board. D is a hard-compressed fiber board. E is an old-style fiber wallboard.

Tensile Tests

Specimens in these tests were cut 3 in. wide and 18 in. long, and the distance allowed between the jaws of the testing machine was 8 in.

As in the compression tests, two series of tests were made on the Douglas Fir Plywood, in one the load acting parallel with the grain of the outside plies, and in the other, across the grain of the outside plies.

Transverse Tests

Here again two series of tests were made on the Douglas Fir Plywood, one in which the load acted parallel with the direction of the grain of the outside plies and another in which the load acted across the grain of the outside plies.

All test pieces were 6 in. wide and 18 in. long. They were placed on supports 12 in. on centers, and the load was applied at midspan.

TRANSVERSE TESTS ON DOUGLAS FIR PLYWOOD

Dimension of Test Specimen			Ultimate load, lbs.	Deflection ultimate load, in.
Thickness	Width, in.	Length, in.		
Load Acting Across the Grain of Outside Plies				
3/4", 5-ply	6	18	1336	.43
5/8", 5-ply	6	18	696	.42
1/2", 5-ply	6	18	702	.53
3/8", 3-ply	6	18	434	.51
1/4", 3-ply	6	18	220	.76
3/16", 3-ply	6	18	214	1.10
Load Acting with the Grain of Outside Plies				
3/4", 5-ply	6	18	1112	.57
5/8", 5-ply	6	18	758	.53
1/2", 5-ply	6	18	388	.92
3/8", 3-ply	6	18	147	1.36
1/4", 3-ply	6	18	50	1.84
TRANSVERSE TESTS ON OTHER MATERIALS				
A 1/2"	6	18	27	.66
B 7/16"	6	18	15	....
C 1/4"	6	18	42	.61
D 3/16"	6	18	51	.92
E 3/16"	6	18	31	.95

Key: Materials A and B are fiber insulating boards. C is a plaster board. D is a hard-compressed fiber board. E is an old-style fiber wallboard.

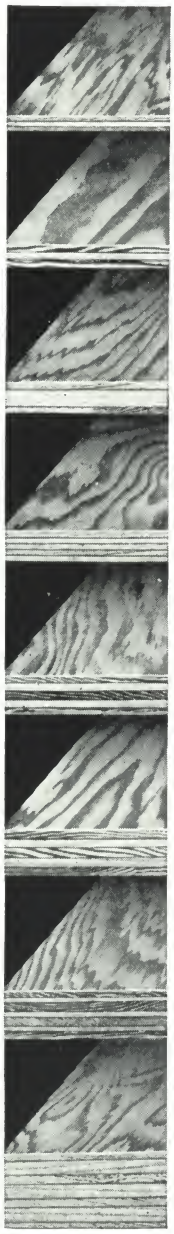
WATER ABSORPTION TESTS

(Figures show per cent absorption at different periods)

Douglas Fir Plywood	4 hours	8 hours	24 hours	48 hours
Thickness				
3/4"	10.3	12.9	18.2	27.3
5/8"	9.7	13.6	19.7	29.6
1/2"	9.0	12.6	18.4	27.5
3/8"	9.2	13.6	17.9	27.5
1/4"	16.9	24.9	29.7	47.4
Material A	23.5	43.3	49.9	67.8
Material B	22.5	32.8	44.8	51.5
Material C	52.3	62.9	66.6	71.2
Material D	7.1	11.5	16.0	23.3
Material E	83.0	98.0	115.9	128.5

Key: Materials A and B are fiber insulating boards. C is a plaster board. D is a hard-compressed fiber board. E is an old-style fiber wallboard.

Representative Plies and Thicknesses of DOUGLAS FIR PLYWOOD



1/4 in.—3 ply

Used largely for drawer bottoms, case and picture backs, and toys. Most Douglas Fir Plywood wallboard is made in this thickness.

3/8 in.—3 ply

Manufacturers of refrigerators, trunks, kitchen cabinets, store fixtures, auto body parts, and instrument cases use this construction.

1/2 in.—3 ply

This is an economical shelf material for cabinets of all kinds. Also used in auto body parts, incubators, etc.

1/2 in.—5 ply

This construction is superior to that just above, both in tensile and in transverse strength. When 1/2 in. is required in large sheets this construction is recommended.

5/8 in.—5 ply

In floor boards, lock boards, seat frames and other automobile body parts and for concrete forms, etc., this thickness finds especial favor.

3/4 in.—5 ply

Used by auto body manufacturers preferring a heavier floor board. Also recommended for heavy shelf construction, store fixtures, concrete form lumber.

7/8 in.—7 ply

Furnishes extraordinary, well-balanced strength. Much used in ship building for bulkhead panels, stateroom partitions, etc.

1 3/16 in.—7 ply

Widely used for instrument boards, ice machine bases, desk tops, bus seats and a variety of other purposes requiring an exceptionally strong and rigid board.

Water Absorption Tests

Note: These tests were made with the usual Douglas Fir Plywood, in which water-resistant glue is used. The specially-fabricated-and-treated Douglas Fir Plywood for concrete forms is made with a different glue which is the most water-resistant of any glue made. This material is then treated with a water-repellant.

All test pieces were cut 6x6 in. The edges of all pieces were sealed with paraffin, after which they were submerged in water to a depth of 1½ in. Weight readings were taken at four, eight, twenty-four and forty-eight hours. The per cent of water absorption at the different periods is given in the table at left.

Nail-holding Tests

In this test all specimens were cut 10x10 in. The specimens were nailed on two pieces of sawed and planed Douglas Fir 1¾x1¾x13½ in. The nails were spaced 3 in. on centers and driven through the test specimens into the supporting member. Supports were spaced 7½ in. on centers. The nailed-up sections were placed in the testing machine in such a manner as to exert a direct pull on the nails.

The Douglas Fir Plywood specimens were given a most severe test in that cement-coated box nails were used, whereas ordinary nails were used in the other materials. In spite of this severe test, eighty-five of the ninety nails were pulled out of the supporting members.

In the other test specimens, every one of the nails remained in the supporting member, the heads of all nails pulling through the test specimens. Douglas Fir Plywood, because of its laminated construction, will hold nails exceedingly well even though they are driven very close to the edge of the plywood.

Compression Tests

Two series of tests were made on Douglas Fir Plywood. In the first series the load acted parallel with the grain of the outside plies. In the second series the load acted across the grain of the outside plies. Only one series of tests was necessary on the other materials, because their grain or fiber did not run in different directions. All compression test pieces were cut exactly 6x6 in. and bearing was obtained by placing the pieces in the testing machine and applying the load on the opposite edge.

TESTS TO DETERMINE THE NAIL-HOLDING POWER OF DOUGLAS FIR PLYWOOD

(6 Nails Used in Each Specimen, Spaced 3 Ins. on Centers)

Test No.	Size of test specimen, in.	Type of nails	Ultimate load, lbs.	Load per nail, lbs.
1	5-ply 10x10x3/4	8d box (Cement-coated)	1670	278
2			1410	235
3			1650	275
			Average per nail	262
4	5-ply 10x10x5/8	6d box (Cement-coated)	1540	256
5			1400	233
6			1430	238
			Average per nail	242
7	5-ply 10x10x1/2	6d box (Cement-coated)	1460	263
8			1270	211
9			1230	205
			Average per nail	226
10	3-ply 10x10x3/8	6d box (Cement-coated)	1410	235
11			1370	228
12			1170	195
			Average per nail	219
13	3-ply 10x10x1/4	4d box (Cement-coated)	790	131
14			830	138
15			790	131
			Average per nail	133

TESTS TO DETERMINE THE NAIL-HOLDING POWER OF MATERIALS A, B, C, D, AND E

(6 Nails Used in Each Specimen, Spaced 3 Ins. on Centers)

Test No.	Size of test specimen, in.	Type of nails	Ultimate load, lbs.	Load per nail, lbs.
Material A				
1	10x10x1/2	1½ gal. roofing	250	41.6
2			290	46.6
3			290	46.6
			Average per nail	44.9
Material B				
4	10x10x7/16	1½ gal. roofing	370	61.6
5			320	53.3
6			370	61.6
			Average per nail	58.8
Material C				
7	10x10x1/4	4d box	260	43.3
8			210	35.0
9			230	38.3
			Average per nail	38.8
Material D				
10	10x10x3/16	4d box	550	91.6
11			590	98.3
12			610	101.1
			Average per nail	97.0
Material E				
13	10x10x3/16	1½ gal. roofing	320	53.3
14			370	61.6
15			330	55.0
			Average per nail	56.6

Key: Materials A and B are fiber insulating boards. C is a plaster board. D is a hard-compressed fiber board. E is an old-style fiber wallboard.

COMPRESSION TESTS ON DOUGLAS FIR PLYWOOD

Dimension of Test Specimen			Area, sq. in.	Ultimate load, lbs.	Ld., lbs., sq. in.
Thickness	Wth., in.	Lgth., in.			
Load Acting with the Grain of Outside Plies					
3/4", 5-ply	6	6	4.50	18538	4186
5/8", 5-ply	6	6	3.75	10644	2893
1/2", 5-ply	6	6	3.00	10492	3497
3/8", 3-ply	6	6	2.25	6630	2860
1/4", 3-ply	6	6	1.50	4198	2855
3/16", 3-ply	6	6	1.125	2014	1917
Load Acting Across the Grain of Outside Plies					
3/4", 5-ply	6	6	4.50	15262	3436
5/8", 5-ply	6	6	3.75	9096	2472
1/2", 5-ply	6	6	3.00	6462	2162
3/8", 3-ply	6	6	2.25	5206	2180
1/4", 3-ply	6	6	1.50	908	609
3/16", 3-ply	6	6	1.125	380	360

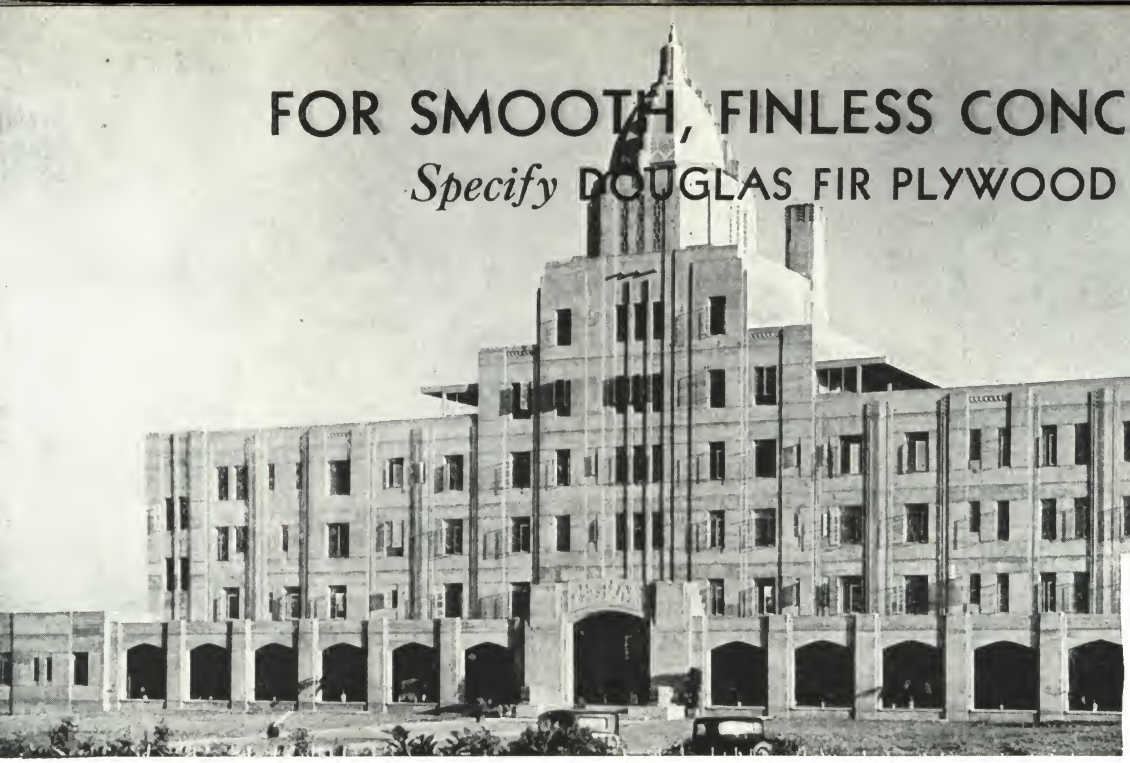
COMPRESSION TESTS ON OTHER MATERIALS

A .500	6	6	3.0	690	230
B .4375	6	6	2.625	448	170
C .25	6	6	1.50	826	550
D .1875	6	6	1.125	846	751
E .1875	6	6	1.125	390	346

Key: Materials A and B are fiber insulating boards. C is a plaster board. D is a hard-compressed fiber board. E is an old-style fiber wallboard.

FOR SMOOTH, FINLESS CONCRETE

Specify DOUGLAS FIR PLYWOOD



● Because smooth concrete walls in large block-type areas with the appearance of stone were specified for the new St. Luke's Hospital in Pasadena, Cal., 5/8-in. 5-ply Douglas Fir Plywood was selected as the most economical and satisfactory form material.

● UNIQUE NEW FORM MATERIAL

Few developments in building construction have so quickly commanded acceptance in every section of the country as the new specially-fabricated-and-treated Douglas Fir Plywood for concrete forms. Already, therefore, the following special advantages of this unique new material—which serves as lumber-and-lining combined—have been demonstrated on scores of buildings, bridges, viaducts and other structures requiring flawless surfaces.

1. Highly water-resistant—can be used 7 to 10 times.
2. Saves 40 to 75% carpentry labor.
3. Speeds up stripping.
4. Gives smooth, finless surfaces immediately.
5. No costly rubbing or plastering necessary.
6. Split-proof, non-bulging, ideal for reverse moulds.
7. Giant sizes reduce lineal footage of joints. *(Stock sizes up to 4 x 8 ft., larger sizes on special order.)*

Although architects and contractors generally prefer the 5/8-in. thickness—which requires no lining—this special Douglas Fir Plywood is also available 1/4-in. thick for lining and for curved forms.

Besides all the other economies offered by this material, *the 5/8-in. panels cost less than shiplap with a suitable lining.*

This new form material is made of thin sheets of selected old-growth Douglas Fir, laminated with alternating grain direction for split-proof, warp-resistant strength. These sheets are bonded with a special glue that is highly water-resistant and far stronger than the wood fibers themselves. Finally each panel is sanded and thoroughly treated with a water-repelling agent developed especially for Fir Plywood.

This double waterproofing protection gives these special panels stamina for 7 to 10 re-uses, after which they are still suitable for sheathing, subflooring, and other utility uses.

● SAVES 40% TO 75% CARPENTRY LABOR

With these giant panels—4 x 8 ft., or even larger on special order—carpenters can erect forms with only a fraction of the handling, sawing and nailing required by ordinary lumber, and the use of the 5/8-in. panels saves all the extra labor of lining forms.

Douglas Fir Plywood also reduces the labor cost of fastening reverse-moulds. These can be nailed or screwed close to the edges of the plywood without fear of splitting.

For curved forms, the 1/4-in. panels can be bent without steaming to a radius as small as 15 in. If steamed for a few minutes, this thickness can be bent to an 8-in. radius.

Douglas Fir Plywood can be cut with either hand or power saws. Also it is remarkably lightweight in proportion to its extraordinary strength. A 4x8-ft. panel of 5/8-in., for example, weighs only about 55 lbs., and a

Below—Left and Right—Douglas Fir Plywood ceiling forms—ready for pouring. Note the flat, seamless surfaces provided by the large panels. These require a minimum of sawing and nailing, which means faster work and a lower labor cost

The finished ceiling after the forms at left had been removed. Note the absence of fins or other blemishes, a result obtained without rubbing, which means a saving of five to fifteen cents a square foot

• Adapted from March, April and July, 1930, issues of Concrete.

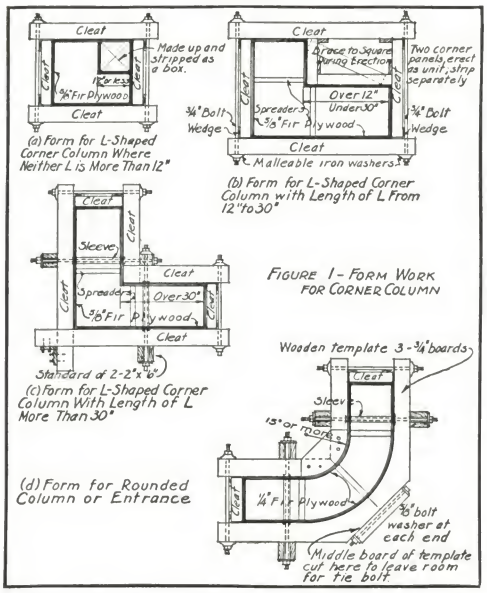


FIGURE 1 - FORM WORK FOR CORNER COLUMN

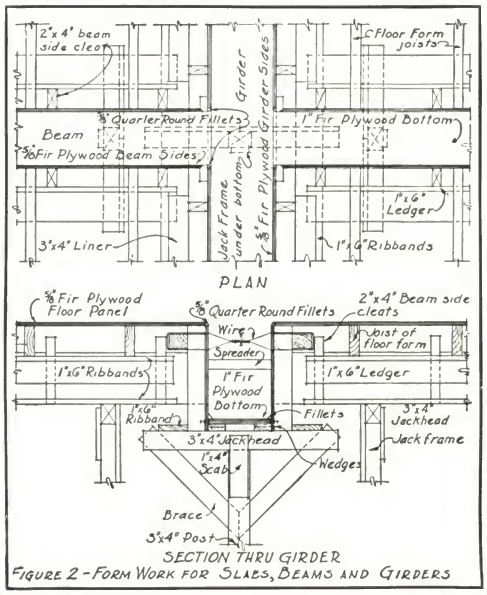


FIGURE 2 - FORM WORK FOR SLABS, BEAMS AND GIRDERS

FIGURE 3 TYPICAL WALL FORM ASSEMBLY

¼-in. panel of the same size weighs only about 24 lbs. Whole sections of forms can be hoisted easily into place.

Specially shaped or shiplapped edges may be obtained on special order at little extra cost. In some types of forms, such edges eliminate fillets and quarter rounds, and simplify dismantling.

• NO COSTLY RUBBING OR PLASTERING

So smooth are the sanded surfaces of this material, and so greatly do the large, tight-fitting panels reduce the footage of joints, that practically no rubbing is necessary. The joints *stay tight* because of Douglas Fir Plywood's stubborn resistance to shrinking and swelling. Thus all the moisture is retained in the concrete, preventing honeycombed surfaces, as well as "fins."

Douglas Fir Plywood's virtual elimination of rubbing means a saving in this one respect alone of from 5¢ to 15¢ a square foot. And if stucco or paint is desired, the smooth surface requires much less of either, and of course much less labor.

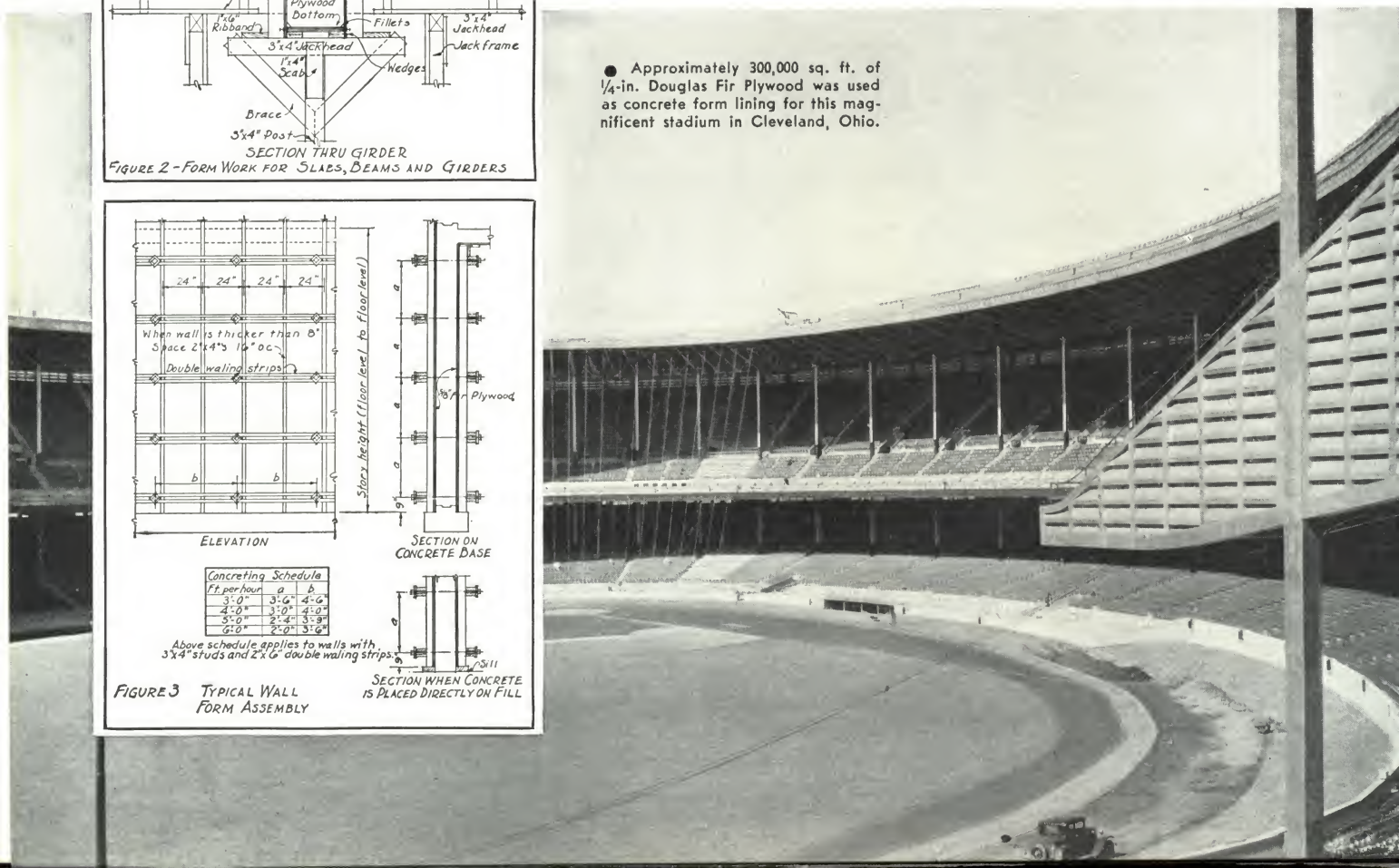
• • •

Figure 1—All cleats, studding, bracing, etc., for Douglas Fir Plywood forms of this type can be exactly the same as if ordinary lumber were being used. Note the simplicity of such forms for rounded corners or entrance columns. A wide variety of corner or intermediate column designs is possible with a minimum of carpentry when Douglas Fir Plywood is used.

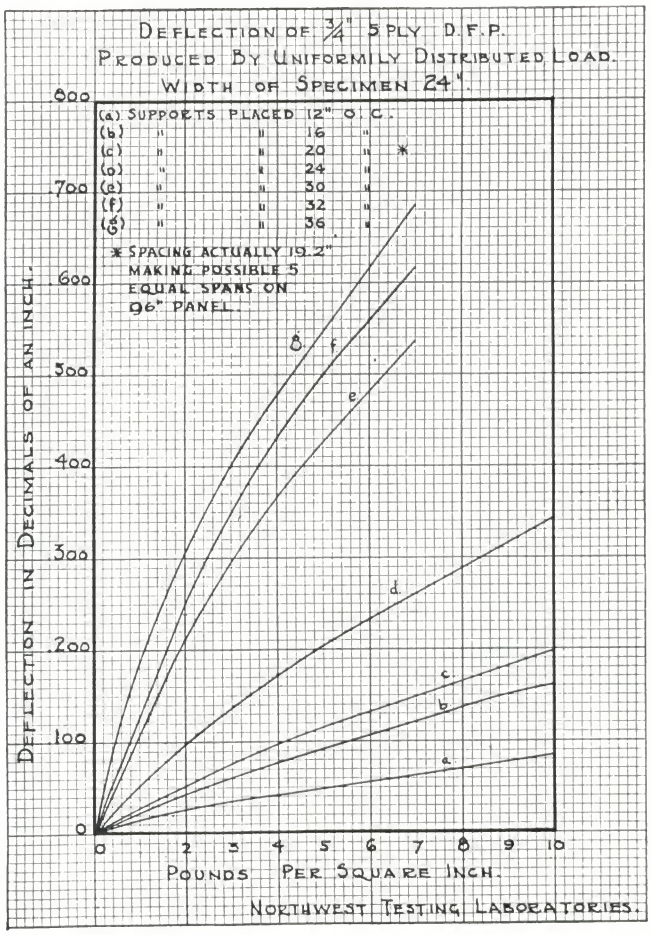
Figure 2—Douglas Fir Plywood forms are of particular value in construction involving a number of identical units, and for such work it is essential that the forms suffer the least possible damage in stripping. The use of double-headed nails wherever possible is therefore recommended. Do not use larger nails than necessary. Forms should not be allowed to drop violently to the floor below, because careless dismantling naturally will reduce the number of re-uses possible.

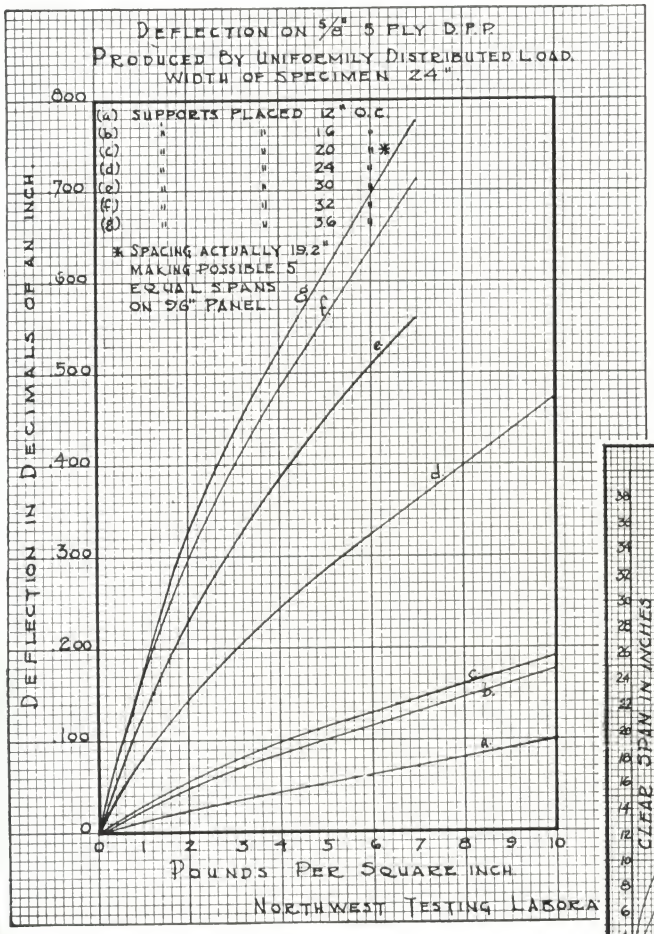
Figure 3—Douglas Fir Plywood forms will be found particularly economical for straight wall work, as the large panels greatly reduce the lineal footage of joints. Straight wall forms of this material can be constructed in large sections, because of its combination of light weight and great strength. The size of such sections will depend upon the equipment available for moving them.

Special Note—For a special Construction Bulletin containing larger reproductions of Figs. 1, 2, and 3, address DOUGLAS FIR PLYWOOD ASSOCIATION, Research and Advertising Headquarters, Dept. 136-Z, Skinner Bldg., Seattle, Wash.



• Approximately 300,000 sq. ft. of ¼-in. Douglas Fir Plywood was used as concrete form lining for this magnificent stadium in Cleveland, Ohio.





The fact that Douglas Fir Plywood requires no overlapping edges means that 1000 sq. ft. of it cover 1000 sq. ft. of surface, whereas 1200 sq. ft. of shiplap would be required for the same area.

● QUICK STRIPPING

The giant Douglas Fir Plywood panels make it possible to strip forms in a fraction of the usual time, and the rugged, laminated construction of this material minimizes dismantling damage.

● EXTRAORDINARY STRENGTH

The remarkable strength of Douglas Fir Plywood—demonstrated by the test data on pages 7 and 8 of this catalogue—means that the panels will never crack or bulge, when properly supported.

However, studs should not be spaced farther apart than on ordinary lumber forms. As in all concrete work, if pouring is faster than 3 ft. an hour, special care with bracing, waling strips and ties is necessary. When the ¼-in. lining is used, the forms need not be built up solidly with lumber. Spacing between the boards can be from 2 to 4 in.

Charts at Left

The graphs at left—showing deflections on ⅝-in. and ¾-in. Douglas Fir Plywood over various spans—will enable the reader to determine precisely what spacing of bracing will be required for a particular form.

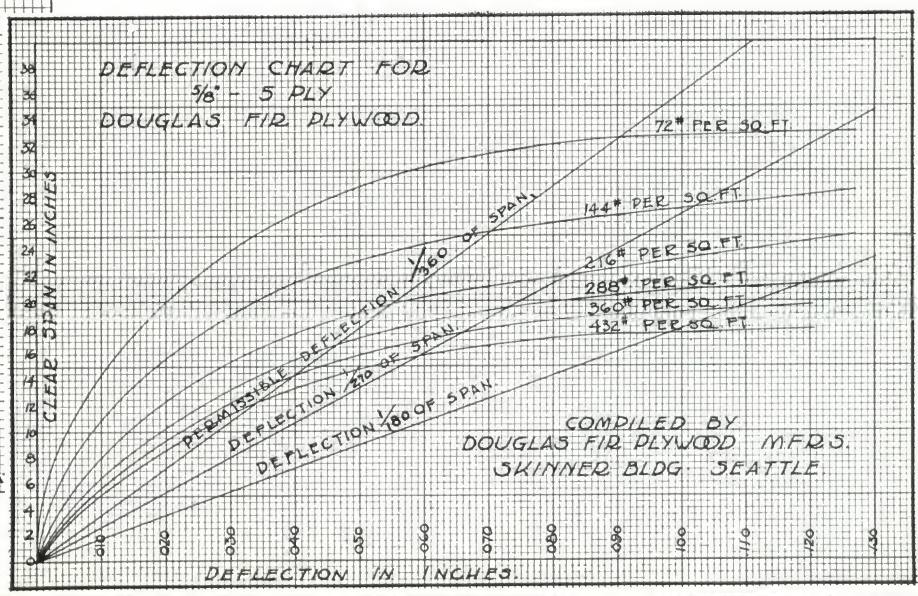
We recommend that studding be spaced no farther apart than 24 inches, and that—except for curved forms or lining—no stock less than ⅝ in. thick be used. Reinforcing members for curved forms must be provided in accordance with the shape of the curve, and the size of the post or wall.

How to Use Chart Below

First determine the permissible deflection in the work at hand. In most steel beam and girder construction the permissible deflection is 1/360th of the span. In a concrete wall or slab a 25% greater "bulge" or deflection, 1/270th of the span, is negligible.

Assume that we have a wall or slab to form that will exert a pressure of 288 lbs. per sq. ft. on the form structure—equal to approximately 2 cu. ft. on concrete—and decide to place the studding 16 in. on centers. If the permissible deflection is 1/270th of the span, we find that the actual permissible deflection is about .06 in. Find the point .060 on the deflection scale and follow this line up until it intersects the 16-in. clear span line.

We find that we are well below the curve load of 288 lbs. per sq. ft. and safely over the permissible deflection line, so that a 16-in. center-to-center spacing of studding is satisfactory.



DOUGLAS FIR
PLYWOOD

The "Engineered" Lumber!

WHEELER OSGOOD SALES CORPORATION

FACTORY
TACOMA, WASHINGTON
GENERAL SALES OFFICES: 122 South Michigan Avenue, CHICAGO, ILL.

Products

LAMINEX PLYWOOD for general construction work; LAMINEX WALLBOARD for walls, ceilings and miscellaneous uses; LAMINEX PLYFORM for concrete form construction.

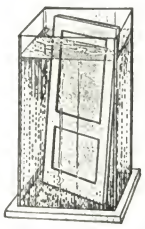
For our pages on Laminex and Woco Doors, see File Index.

LAMINEX
PLYWOOD
WALLBOARD
PLYFORM

Laminex Plywood Is Furnished in Large, Clear Sheets

The Company

Laminex Products are manufactured by WHEELER OSGOOD SALES CORPORATION at Tacoma, Washington. Backed by nearly 50 years' experience in the development, design and production of laminated products. The large and modern plant is located "next door" to the great Douglas Fir forests of virgin timber.



Laminex Products Stand the Famous Water Test

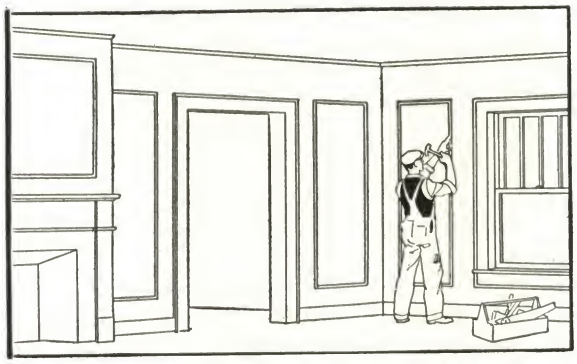
LAMINEX PLYWOOD

Engineered Lumber — Laminex Plywood is *engineered* lumber. Built up of 3 or more layers, each one cross-grained to the next. These layers are scientifically dried to give them a uniform moisture content. The layers are bonded together by the famous Laminex water-resistant cement that provides a joint stronger than the board itself. Although light in weight, Laminex Plywood is tough and strong —actually stronger than steel, pound for pound.

Sizes—All standard stock sizes up to 4x8 ft. available; larger sizes also may be obtained when specified. Thicknesses range from $\frac{3}{16}$ in. up to 1⅛ in.—including: ¼, ⅜, ½, ⅝, and ¾ in.

Many Uses—Laminex Plywood is ideal for countless different kinds of construction jobs, where its strength, great nail holding power, easy sawing, large areas, freedom from flaws and smooth surfaces mean better work, and labor saved. Some of the many applications for this efficient lumber are: Cupboards, cabinets, bins, paneling, partitioning, modern furniture, sheathing, shelving, booths.

Any Finish—The smooth surface of Laminex Plywood takes virtually any finish. It can be stained, waxed, lacquered, painted. New, rough or weathered effects can be obtained by sand blasting.



Laminex Wallboard for Stronger, Crackproof Walls and Ceilings

Laminex Quality—Laminex Plywood, Wallboard and Plyform are made by the manufacturers of Laminex Doors, known for their warp-resisting qualities. All Laminex products are made to the high standard of quality that has won wide acceptance among industrial concerns, architects, contractors, carpenters, engineers and the public.

LAMINEX WALLBOARD

Made in three, cross-grained layers by the same process as Plywood, Laminex Wallboard assures walls and ceilings that will not crack, shrink or swell. Fewer joints are necessary due to the large sheets. Labor time and cost are less. Available in 32 and 48-in. widths; 60, 72, 84, 96-in. lengths and intermediate lengths up to 144 in. Thicknesses: $\frac{3}{16}$, ¼, ⅜ and ½ in.

The working side of this sheet is perfectly smooth and flawless. Every inch is usable. Furthermore, Laminex Wallboard provides insulation against heat, cold, sound. Curved surfaces can be easily formed. Beautiful paneled effects can be obtained—painted, or with the natural wood grain, stained or waxed. Laminex Wallboard forms a base for paper or other wall materials. Plastic paints can be used to provide distinctive effects. For floors and sub-floors, Laminex Wallboard is practical and economical. It does away with high spots which cause extra wear when linoleum or carpeting is used. As a sub-flooring, Laminex Wallboard can reduce both labor-time and cost.

LAMINEX PLYFORM

This light, strong board is designed especially for economical and efficient concrete form construction. Each panel is sanded to perfect smoothness. It can be treated to make it water-repellent when so specified. Its great strength makes Laminex Plyform usable over and over again.

Architects should specify Laminex Plyform and not "plywood" as the glue used in Plyform is specially made for that purpose, and the manufacture of Plyform is longer and more accurately controlled. Special Laminex water-resistant cement binds the cross-grained layers, making a joint actually stronger than the board itself. Smoother concrete results with Laminex Plyform. Large-sized panels, tight-fitting joints, and accurate cutting to size, mean a beautiful concrete surface with minimum of fins.

All labor of lining forms as well as cost is saved. 5¢ to 15¢ per sq. ft. in rubbing and grinding can be saved. In general, labor costs can be reduced by 20% to 40%. Since Plyform requires only 1 b. f. per sq. ft. of form area, it effects a large saving over sheathing. Bracing is simple, requiring minimum of carpentry work. Round corners and reverse moulds, battered walls and difficult offsets are easily constructed. Large, lightweight units mean easy stripping.

Laminex Plyform is available in intermediate sizes under 4x8-ft. or larger when specified. Thicknesses are: ½-, $\frac{9}{16}$-, ⅝- and ¾-in. Weights per 1000 sq. ft. are: ½-in., 1525 lbs.; $\frac{9}{16}$-in., 1675 lbs.; ⅝-in., 1825 lbs.; ¾-in., 2225 lbs.

Laminex Plyform Means Better, More Economical Concrete Form Construction

WHEELER OSGOOD SALES CORPORATION *offer a special service in the working out of problems of concrete forming. Further information on Plyform and other Laminex products, also samples, available on request.*

UNITED STATES PLYWOOD CO., INC.

Plywood—Flexwood—Armorply—Micarta—Weldwood—Laminated Products

MAIN OFFICE
603 West 36th Street
NEW YORK, N. Y.

BRANCH OFFICES
BOSTON PHILADELPHIA ROCHESTER DETROIT BALTIMORE LOS ANGELES SAN FRANCISCO

PRODUCTS

Plywood—Laminated veneers used for table tops, counter tops, fixture and cabinet work. Plywood is manufactured in any of the rare and exotic woods and is made to architectural specifications. Plywood in standard sizes is carried in stock at the warehouses listed above for immediate delivery.

Weldwood—Plywood laminated with phenolic resin under heat, producing an absolutely waterproof product. Its laminations, welded with bakelite resin, can not separate under water. The glue lines can not rot because they will not support bacterial deterioration. The wood itself is rendered practically rot-proof.

Armorply—Metal-faced plywood of great structural strength and minimum weight, having one or both sides faced with metal. Carried in stock faced with galvanneal steel. Used for truck body panelling, partitions, ship bulkheads, signs, table tops, etc. Stainless steel, copper and other metals for structural or decorative purposes manufactured on order.

Micarta—Distributors East of the Mississippi for Decorative Micarta, laminated phenolic resin sheets. Used for tops, fixtures, bars, wainscoting, panels, store fronts. Micarta is furnished in sheet form or fabricated to architectural specifications. For detailed description, see catalog of the Westinghouse Electric & Manufacturing Company as listed in File Index.

Fire Resistant Plywood—Plywood with fully impregnated fire resistant cores. Asbestos board faced with veneer and combinations of asbestos, steel and veneer constructions designed to meet City Ordinances and conditions requiring highly flame-proof insulation.

Permanent Architectural Exhibit—In Suite No. 810 at 103 Park Avenue, New York City, the United States Plywood Co., Inc., maintains a permanent exhibit of Plywood, Flexwood and Laminated Products. Here will be found more than one hundred and fifty different woods, finished and unfinished. Architects, owners, decorators and contractors are cordially invited to visit this display and avail themselves of its complete facilities.

Curved Fireproof Plywood Faced with Brazilian Rosewood and Other Woods, Used for Circular Bar and Back-Bar of Waldorf-Astoria Hotel, New York, N. Y.

Panelling throughout manufactured by United States Plywood Co., Inc.

Schultze & Weaver, Architects — Jacob Froelich Cabinet Works, Contractor

Flexwood

FOR CREATING WOOD INTERIORS

Reg. U. S. Pat. Off. Patent No. 1819775

Address Correspondence on Flexwood to 103 Park Avenue, New York, N. Y.

Flexwood is genuine wood veneer cut to 1/85 of an inch, glued under heat and hydraulic pressure to cotton sheeting with a waterproof adhesive. A patented flexing operation breaks the cellular unity of the wood to produce a limp, pliable sheet which may be applied by hand to any smooth surface, flat or curved. Waterproof Flexwood cement, which makes a permanent bond, is used to apply Flexwood. Standard sizes of stock material are 18-in. and 24-in. widths and 8-ft. and 10-ft. lengths.

Dry Plaster, steel, Fir Plywood, hard wallboards, tile, marble, asbestos, glass, etc., make perfect backgrounds for Flexwood treatment. Sheets may be hung horizontally or vertically for modern sheer wall treatments or for Georgian or classical panel designs. Inlays and murals are produced by combining various woods.

Columns, round or square, can be completely wrapped with Flexwood. Sharp corners and fluted pilasters are treated as easily as plane surfaces.

The Mechanics of installation are simple. The background is sized with Flexwood cement. Another coating of cement is brushed on the Flexwood which is then hung in the manner of any sheet wall covering. A stiff broadknife, used with considerable pressure, smooths out the Flexwood, removes air spaces and furnishes the necessary contact. Any skilled paperhanger can do a perfect job by following printed instructions.

Flexwood, because it is wood, takes any wood finish.

Flexwood in the hands of the designer is a tool as essential as metal, paint or glass for creating modern effects. Its uses are limited only by the ingenuity of the designer.

The Definite Economy of Flexwood interiors is particularly emphasized in sheer wall treatment and when it is used in buildings governed by city fire ordinances.

Rare and Exotic woods from all corners of the earth are available in Flexwood, making it possible to create and execute distinctive interiors in from 25-50% of the time normally required. Wood selections can be made from actual flitch samples. Distributors are located in sixty principal cities.

Some of the Woods available in Flexwood are:

Mahogany	Knotty Pine	Harewood	English Oak
Walnut	Orientalwood	Macassar Ebony	Maple
Oak	Satinwood	Tamo	Avodire
Prima Vera	Zebrawood	Rosewood	Lacewood

Flexwood meets every decorative requirement in the field of homes, offices and institutions. When the luxury obtainable only with genuine wood treatment is desired and economy and time are imperative, Flexwood is the answer.

Manufactured and marketed jointly by The Mengel Co. of Louisville, Ky., and the United States Plywood Co., Inc.

Typical Samples of Prima Vera and East Indian Rosewood Flexwood

Flexwood Treatment in Circular Room

Showing horizontal and vertical application. Mural is inlaid Flexwood in various woods

Fellheimer & Wagner, Architects

HARTMANN-SANDERS CO.

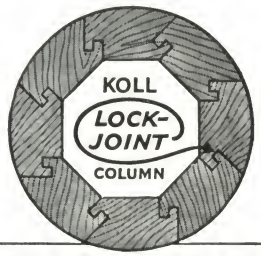
Exclusive Manufacturers of Koll's Patent Lock-joint Wood Staved and Turned Columns

MAIN OFFICE AND FACTORY
2155-2187 Elston Avenue, CHICAGO, ILL.
EASTERN OFFICE, 101 Park Avenue, Architects Building, NEW YORK, N. Y.

Products

KOLL'S PATENT LOCK-JOINT WOOD STAVE COLUMNS for exterior and interior; columns made in all woods; ROPED COLUMNS with pilasters and square columns; EXTERIOR and INTERIOR WOODWORK; COMPOSITION ORNAMENTAL CAPITALS.

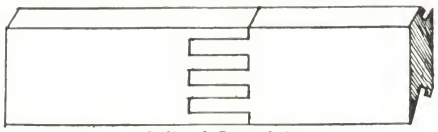
Also manufacturers of Pergolas, Lattice Work, and all architectural work for the garden.



THEY CANNOT COME APART

Spliced Butt Joint

In addition to the perfect lock-joint of the staves, a joint has been devised to splice the



Spliced Butt Joint

butts of the staves should the length of column call for material longer than can be secured in one piece. In this process joints are put together with screw pressure and cold water waterproof glue, which helps to make these columns mechanically perfect.

Architect's Details

Columns conform accurately to any detail, are of the best materials and at as reasonable rates as are consistent with good work.

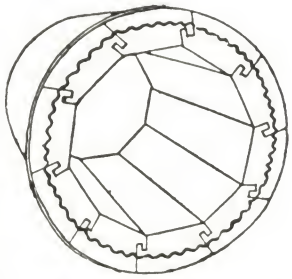
Our Patent Correct Entasis

Correct entasis secured in forming stave itself—The staves in all columns manufactured under Koll's patent are, in order to secure the proper entasis, straight one-third and swell-tapered upper two-thirds, so that when shaft is formed the correct entasis is obtained, securing sufficient stock at top and bottom of shaft to permit turning to detail without cutting too close to joint.

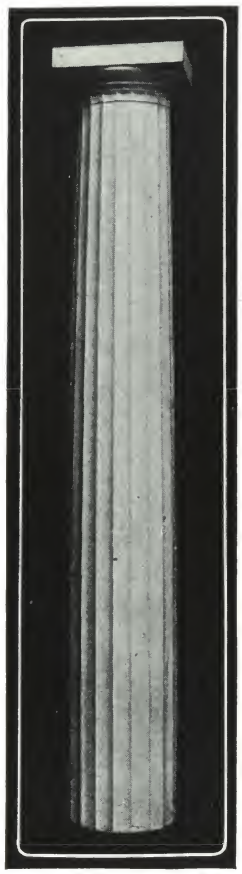
Columns furnished in any style of fluting or reeding.

Steel Reinforcement

A corrugated steel band or ferrule reinforcement is applied to the bottom end of all Doric columns. The steel band, while adding considerable strength to the shaft, permits some flexibility so that no injury can be done by moisture that may be absorbed. This reinforcement is also added to both ends of all large columns.



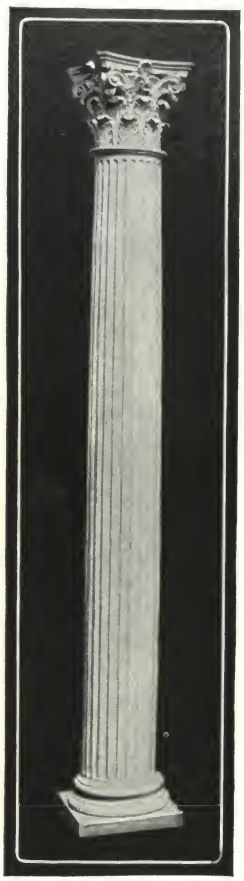
Steel Reinforcement



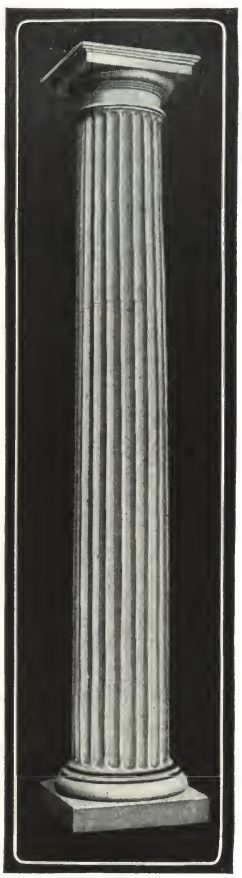
No. 195
Greek Doric Column Fluted

No. 235
Fluted Column Roman Ionic Cap Attic Base

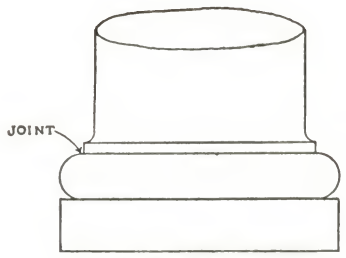
No. 220
Plain Column Doric Cap Attic Base



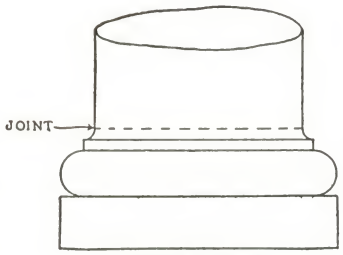
No. 255
Fluted Column Corinthian Cap Attic Base



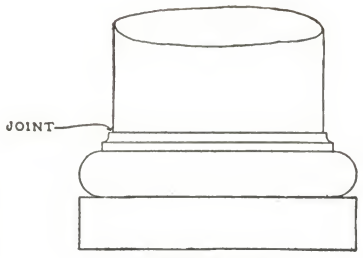
No. 215
Roman Doric Column Fluted



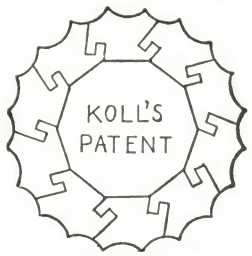
Style A Cove



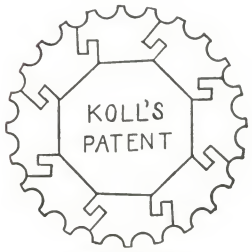
Style B Cove



Style C Cove



Doric Fluting Columns
195, 195⅔, 215 and 215⅔



Ionic Fluting
Used on all other fluted columns shown in catalogue

KOLL'S PATENT WOOD COLUMNS

	2-in. stock	2½-in. stock	3-in. stock	4-in. stock
With Cove on Shaft Like Style A				
Plain shaft .....in.	up to 18	19 to 22	23 to 30	31 and up
Doric and Ionic fluted .in.	up to 16	17 to 19	20 to 27	28 and up
Doric fluted, No. 195...in.	up to 22	21 to 28	29 to 39	40 and up
Cove Planted on Like B, or Made a Base Member Like C				
Plain shaft .....in.	up to 22	23 to 30	31 to 40	41 and up
Ionic fluted .....in.	up to 22	23 to 28	29 to 38	39 and up

Note: Before ordering columns, it would be well to examine detail closely and note whether cove is to be part of shaft, or whether this can be planted on. This company can make the column either way, but of course must be guided by what specifications and details call for.

Waterproof Glue

The staves of all columns and all exterior work produced by us are put together with cold water waterproof casein glue. Inside of all columns and pilasters above 14 ins. is waterproofed with a special waterproof compound.

Thickness of Stock

As the price of column is regulated by the amount and kind of lumber that enters into its construction, it is very important to state in the specifications the thickness of stock of which columns are to be made.

Our experience as specialists in column construction has demonstrated that thickness of stock for the various sizes, as called for in the table provides enough material to carry out properly the architectural detail and to afford required strength. Should an unusual load be placed on the columns, they can be reinforced by inserting a timber or iron column. When necessary to incase a structural timber or iron column already in place, columns can be made in halves and doweled or rail bolted as desired.

Flashings

Entire top of all wood and ornamental caps should be flashed with either galvanized iron, copper or sheet lead to protect the same from the weather. These flashings will be furnished when so specified.

Roped Columns

We have facilities for making roped columns and Colonial roped balusters, both for exterior and interior work. We can furnish them in stock designs or according to the architect's detail.

Cast Iron Metal Plinths

When columns rest on a cement or brick floor, the use of cast iron metal ventilated plinths is recommended. We furnish these in all sizes.

Cast Iron Metal Plinth

Specifications

Columns shall be the Koll's Patent Lock-joint Staved Wood Column, manufactured by the HARTMANN-SANDERS CO., Chicago and New York, made according to their design No. ....

(Here specify the number in catalogue and if design is to be made according to the architect's drawing say: To be made according to details furnished.)

Staves shall be made of clear white pine stock (here specify the thickness wanted).

(See schedule for thickness of staves necessary for the various sizes of columns.)

Shafts, bases and gaps shall be glued with waterproof cold water glue; for staves longer than ordinary lumber length, staves shall be lengthened with a splice joint. Top of all column caps shall be flashed with galvanized iron (sheet lead or copper). The flashing to extend ½ in. over the edge of caps. The square plinths of column shall be cast iron ventilated plinths (or proper ventilation to be provided for the columns if stone concrete or wood plinths are used).

Columns shall be primed at the factory with a coat of white lead and oil on the outside, and all columns above 14 ins. shall receive a coat of waterproof asphaltum paint on the inside of shaft.

Note: Should the columns arrive at building before they are ready to install, they must be stored in the building, or properly protected with waterproof coverings in a thorough manner, including both ends, and top of the column shafts. Do not lay columns directly on ground.

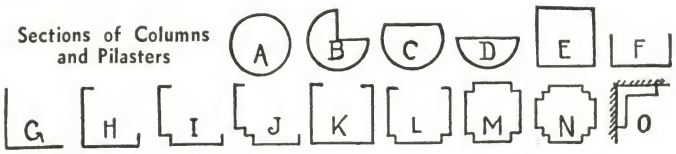
Instructions for Ordering

When ordering columns from our catalogue refer always to our catalogue numbers—give quantity wanted and size at largest and smallest diameter of shaft, and length over all. State if for *interior* or *exterior* use.

Note: All our details are carefully planned from dimensions given by approved authorities but we make no extra charge for following your detail, if similar to any of the designs shown in our catalogue.

When ordering pilasters to match columns, give dimensions at top as well as bottom of shaft, or state whether width is to be equal to the largest or smallest diameter of the column, or if they are to have the mean diameter of column shaft or if they are to have the same taper as the column. Give also depth of return. Refer to line drawing of sections of columns and pilasters when ordering.

Sections of Columns and Pilasters



We prime all exterior and interior columns (unless made of hardwoods) one coat of lead and oil, unless otherwise notified. We make no extra charge for priming.

When composition caps are to be used, we furnish without extra cost suitable wood dowels with columns to carry the weight of the overhead work.

Details

Unless specified to the contrary when ordering, all columns are made according to the proportions of the styles of architecture shown by the various cuts in the catalogue, but we can, if desired, make them according to the architect's detail.

Colonial Entrances and Millwork

Our extended efforts in the field of Colonial Architecture has enabled us to develop our organization to such a degree that we are in position to furnish in addition to our columns and pilasters, also Colonial entrances and millwork generally, either to the architect's detail or our own design.

Catalogues

We send the following catalogues on request:
Catalogue No. 48-8, Wood Columns and Pilasters.
Catalogue No. 53-8, Colonial Entrances.
Catalogue No. 39-8, Pergolas, Architectural Woodwork for the Garden and Garden Accessories.

A. F. SCHWERD MANUFACTURING CO.

Manufacturers of Wood Staved Columns

PITTSBURGH, PA.

Schwerd's Quality Columns

The A. F. SCHWERD MANUFACTURING CO. has for many years been contributing to the architecture of this country wooden columns that are not only correct artistically, but scientifically as well. Many of these columns, installed in buildings a quarter of a century ago, are in as good condition as when they left our factory.

Our painstaking attention to detail in the manufacture of these columns has made the name "Schwerd's Quality Columns" known throughout the building industry.

Service to Architects

During our years of experience in cooperating with architects on the very highest class of work for all types of buildings we have developed a complete line of standard columns and pilasters. These designs are in accordance with best practice and are illustrated and described in our latest catalogue. Copy will be sent on request.

Where the architect wishes to use his own design we can offer complete facilities for production and service and welcome an opportunity to cooperate in any way.

THE MANUFACTURING OF "SCHWERD'S QUALITY COLUMNS"

Seasoning of the White Pine Lumber—*White Pine Lumber is used exclusively in "Schwerd's Quality Columns."* To serve properly its purpose as a support and to withstand successfully the action of the elements, a column must be made of thoroughly seasoned stock. We maintain at all times a year's supply of lumber at the source of supply, where it is seasoned by nature's slow but sure process—the open air.

Making the Staves—The stave machines were built specially to the order of the Schwerd Company. These machines shape and taper and tongue and groove the staves in one operation. By this method, when the staves are glued together, the shaft has the proper entasis, and the turning removes only the roughness of the lumber without weakening the shaft, and leaves shaft equal in thickness of material at any point in its length—an important detail in the life of a support.

Assembling and Gluing—After forming, the staves are spread with a special waterproof glue (by means of rotary brushes so that an even and properly distributed coat is maintained) and assembled. Heavy screw clamps, having a pulling power of 5000 lb., are then applied and drawn tight.

Caps and Bases—These members are made of mitered pieces and held together with corrugated steel fasteners and waterproof glue. This process seals the joints against moisture and prevents opening and consequent decay.

Column Troubles Eliminated—See that columns are in good condition before taken from the railroad station—or have notation made by your agent on your freight receipt of the damage.

See that columns are kept stored in a dry place.

Do not allow columns to lie in damp cellars or newly plastered houses. Do not set up column until the porch roof is finished. Set base and bottom end of shaft in heavy layer of white lead.

Paint Columns as Soon as Placed—We prime to protect the surface.

We are convinced that by observance of the above rules you will eliminate column troubles, as our long experience and close investigation show that a big percentage of trouble arises from causes beyond the control of the manufacturer.

REASONS FOR THE DURABILITY OF "SCHWERD'S QUALITY COLUMNS"

If a column were made of steel, it would be possible to so fashion the joints of the staves that they would rigidly interlock without any other attachment. In the past, attempts have been made to apply this same principle to wooden columns but it has not been successful, because the strength of wood is not sufficient to withstand the necessary tension on the interlocking members.

In every test, whether for demonstration purposes or in actual service, the strength of a wood column will be found to be that of the glue in the joints.

Realizing this, the gluing of the Schwerd Column is made a matter of utmost importance. The glue used is the strongest, most permanent glue obtainable. Schwerd millwork is done with such accuracy that the gluing surfaces meet absolutely flush at every joint. Tremendous pressure is applied to the freshly-glued column so that every particle of glue is either forced into the wood or from the joint.

The result of Schwerd gluing is a joint that is actually stronger than the solid wood, a column that will endure until the building of which it is a part is ready to be demolished.

Composition Caps can be furnished in any style desired.

A FEW REPRESENTATIVE BUILDINGS USING "SCHWERD'S QUALITY COLUMNS"

Harvard University, School of Business, Cambridge, Mass., McKim, Meade & White, Architects.

Harvard University, Langdell Hall, Cambridge, Mass., Coolidge, Shepley, Bulfinch & Abbott, Architects.

Ira Allen Chapel, University of Vermont, Montpelier, Vt., McKim, Meade & White, Architects.

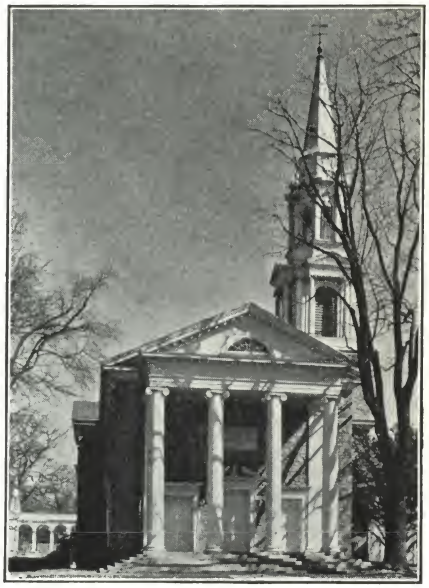
White Sulphur Springs Hotel, White Sulphur, W. Va., Philip Small Inc., Architect.

Mercersburg Academy, Mercersburg, Pa., Day & Klauder, Architects.

Smith College, Music Hall, Northampton, Mass., Delano & Aldrich, Architects.

Gettysburg College, Gettysburg, Pa., Geo. C. Baum, Philadelphia, Architect.

Albany Boys Academy, Albany, N. Y., George Ernest Robinson, Architect.



John M. Clayton School, Frankfort, Del., Guilbert & Betelle, Architects.

State Hospital, Norristown, Pa., Ritter & Shay, Architects.

Wells College, Aurora, N. Y., Dwight James Baum, Architect.

Longmeadow Church, Springfield, Mass., Allen & Collins, Architects.

Fayetteville School, Fayetteville, N. Y., Carl Ade, Architect.

Berwyn School, Berwyn, Pa., Davis & Dunlap, Architects.

Blackburn Memorial Building, Walpole, Mass., Putnam & Cox, Architects.

First Presbyterian Church, New Rochelle, N. Y.
JOHN RUSSELL POPE, Architect,
New York, N. Y.
HYDE, MURPHY CO., Millwork Contractors,
Ridgeway, Pa.
4 detail columns, 33 ins. diam. x 27 ft. long.
Also columns and urns on tower

INSULATION AND ACOUSTICS
- SECTION - 13

CATALOGS *1 to 47*

ALFOL INSULATION COMPANY

INCORPORATED

Manufacturers and Installers of Alfol Aluminum Foil Insulation

TELEPHONES
MUrray Hill 2-3553-3554

Chrysler Building, NEW YORK, N. Y.

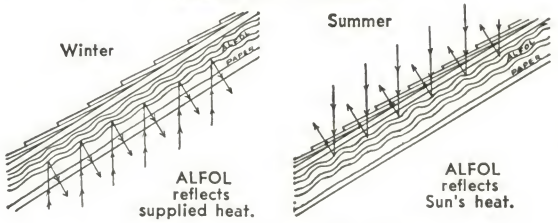
ALFOL AUTHORIZED APPLICATORS
IN ALL PRINCIPAL CITIES

ALFOL REFLECTS HEAT AS A MIRROR REFLECTS LIGHT

Alfol consists of single or multiple sheets of polished pure aluminum foil installed between wall studs, furring strips, ceiling joists or roof rafters. When heat tends to flow through such insulated structures, 95% of radiant heat is reflected back toward its source. In summer, stifling outdoor heat is driven off. In winter, practically all supplied heat is retained in the house where it is needed.

The reflection of heat is a revolutionary principle in insulation engineering which has won wide-spread recognition and acceptance by engineers and scientists throughout the world. Alfol is now extensively used by many of the largest manufacturing and industrial plants, U. S. Navy, and others, as well as in houses and buildings of every kind and size.

Patented in 34 Countries



Alfol will save up to 75% or 80% of the heat loss that would occur through an uninsulated house.

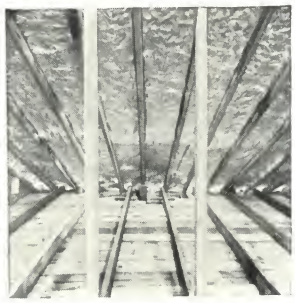
It consequently costs less to heat an Alfol insulated home.

Many owners report over one-third saving in fuel costs.

ALFOL ADVANTAGES

(1) Lack of Heat Storage Capacity — Practically no heat can be stored up in Alfol. In hot summer weather an Alfol insulated structure does not retain stifling day-time heat all during the night. When night-time coolness arrives the house or building becomes cool at once. In cold winter weather Alfol immediately reflects the supplied heat back into the house where it is needed, and the house heats up quicker at considerable savings in fuel costs.

Alfol Insulated Walls Stop Practically All Heat Loss and Eliminate Cold Air Leaks

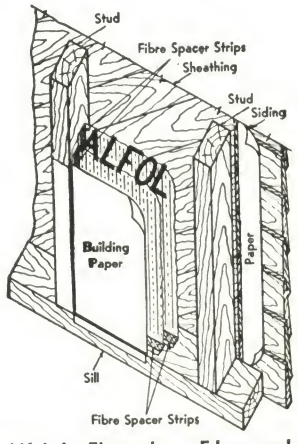


Alfol Roof Insulation Keeps Houses Cooler in Summer and Warmer in Winter

(2) Insulating Value—Authorities on Heat Transmission, such as Prof. Gordon B. Wilkes, M. I. T.; Prof. F. B. Rowley, U. of Minn.; American Society of Heating and Ventilating Engineers, etc., have determined and established the insulating value of Alfol in building structures. It is unexcelled by any other material. (See Table below.)

(3) Unaffected by Dampness—Moisture does not affect the high insulating value of Alfol, because being pure aluminum metal, Alfol positively repels water. Interior decorations and wall surfaces are consequently protected from damage by moisture.

(4) Clean and Sanitary—Alfol being metal is clean and sanitary. It will not produce dust or harbor vermin of any kind. It is not subject to deterioration by natural decay, dry rot, or attacks by fungi. Neither will it swell, warp, shrink, bulge or disintegrate. It remains permanently in position and, because it can not settle or pack together, its density remains unchanged and its insulating value uniformly constant.



Alfol Is Flanged on Edges and Nailed to Face of Studs, Joists or Rafters, Through Fibre Spacer Strips

(5) Fire-Proof—Alfol does not support combustion. It will not flame or char. It provides a fire-deadening blanket around the entire structure.

A copy of the New York City Fire Department Test and Official Approval of Alfol will gladly be mailed upon request.

(6) Low Installed Cost—Alfol provides maximum insulating effect at minimum installed costs.

Method of Installing

Alfol is installed in crumpled curtain form. Single or multiple layers with flanged edges are fastened in the spaces between and to the sides of the studs, rafters, joists or furring strips by means of ¾-in. wide fibre spacer strips securely nailed in place. After Alfol has been installed, the stud, rafter or joist spaces are covered by a layer of building paper. This paper is set back from face of studs, to provide an additional insulating air space, and to provide for a perfect key for plaster. This method of installation permits circulation of air around studs, rafters or joists. The possibility of damp rot or dry rot occurring in the wood structure is thereby minimized.

Installed Only by Authorized Applicators

Alfol is installed only by Alfol Authorized Applicators located in practically every major city. They will contract for a complete installation at very modest cost. Alfol does not furnish "materials only," but a complete installation service—one responsibility, one contractor—which saves you money. All work is done in strict accordance with Alfol Standard Specifications. Send for your copy of these specifications.

Sizes and Forms

Alfol is supplied 16, 18, 20, 22, 24 and 26 in. wide; in rolls containing either 2000 or 3000 sq. ft. weighing from 10 to 20 lbs. Alfol can also be obtained combined with wallboards, metal lath, plaster base, etc. These materials are installed in a manner that permits the reflectivity of Alfol to function in structural air spaces.

DATA ON HEAT SAVINGS EFFECTED BY ALFOL

Construction	Heat Transmission, B.T.U. /hr./sq. ft. /°F.			Heat Transfer Stopped—%	
	Not Insulated	1 layer ALFOL	2 layer ALFOL	1 layer ALFOL	2 layer ALFOL
Wood Stud Wall—4-in. studs..	.26	.12	.09	53 %	65 %
12 in. Brick Wall—Furred....	.25	.11	.09	56 %	64 %
Open Attic Floor.....	.09	.17	.12	75 %	83 %
Wood Shingle Roof.....	.47	.15	.11	68 %	77 %
Concrete Roof—8-in. slab—suspended ceiling.....	.33	.14	.10	58 %	70 %
Slate, Tile or Composition Shingle Roof.....	.53	.16	.12	71 %	79 %

ESTABLISHED 1873

THE PHILIP CAREY COMPANY

Manufacturers of Heat Insulation and Asbestos Products

LOCKLAND, CINCINNATI, OHIO

BRANCH OFFICES IN PRINCIPAL CITIES

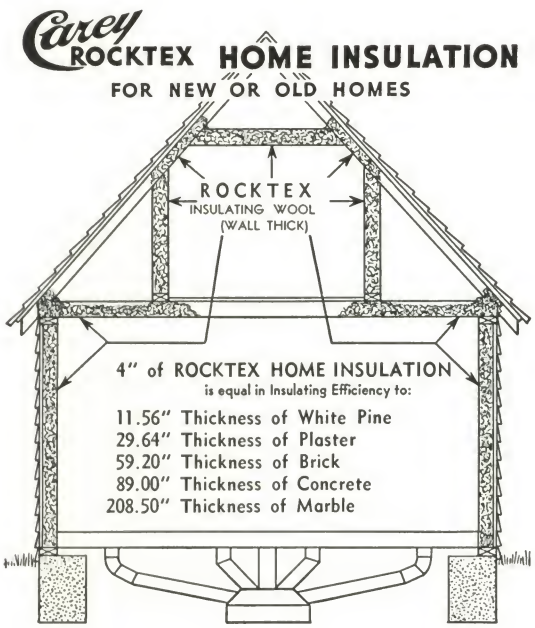
ATLANTA, GA.
BALTIMORE, MD.
BIRMINGHAM, ALA.
BOSTON, MASS.
BUFFALO, N. Y.
CHARLOTTE, N. C.
CHATTANOOGA, TENN.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
COLUMBUS, OHIO
DALLAS, TEX.
DAYTON, OHIO
DETROIT, MICH.
INDIANAPOLIS, IND.
JACKSONVILLE, FLA.
KANSAS CITY, MO.
KNOXVILLE, TENN.
LOS ANGELES, CAL.
LOUISVILLE, KY.
MEMPHIS, TENN.
MINNEAPOLIS, MINN.
NASHVILLE, TENN.
NEW ORLEANS, LA.
NEW YORK, N. Y.
NORFOLK, VA.
OMAHA, NEBR.
PHILADELPHIA, PA.
PITTSBURGH, PA.
SALT LAKE CITY, UTAH
ST. LOUIS, MO.
SAN FRANCISCO, CAL.
SEATTLE, WASH.
WASHINGTON, D. C.
WHEELING, W. VA.

CAREY ROCKTEX—LOW COST—EFFICIENT—HOME INSULATION

Carey Rocktex Building Insulation is a mineral, fibrous material prepared especially for building insulation purposes. Rocktex embodies all the properties required in a first-class building insulator.

Important features in Rocktex are:

1. Fine silky fibres that enable handling without gloves.
2. Neutral chemical balance. Not injurious to workmen.
3. No glass-like needles.
4. Will not deteriorate or disintegrate.
5. Will not harbor mice or vermin.
6. Manufactured at 3000° F.; therefore fireproof.
7. Will not absorb moisture—moisture repellent.
8. Non-conductor of electricity—can be packed around electric wiring.
9. Prepared in forms for easy installation.
10. Does not shrink, bulge, warp nor crack.



Low Conductivity

Rocktex is noted for its low conductivity. Ordinary Rock Wools have, for years, been given a conductivity of 0.27 B.t.u. per sq. ft., per hour, per °F. diff. in temp., per 1 in. thickness. Mellon Institute of Industrial Research gives the following results for the thermal rating of Rocktex:

0.217 B.t.u./hr./sq. ft./° F. diff. in temp. @ 50° F. mean temp.
0.24 B.t.u./hr./sq. ft./° F. diff. in temp. @ 70° F. mean temp.
0.265 B.t.u./hr./sq. ft./° F. diff. in temp. @ 90° F. mean temp.

High Covering Capacity

Loose Fibre Rocktex is packed in 35 lb. paper bags. Each bag will cover 17 sq. ft. gross area, when installed 3⅝-in. thick over flat areas.

Granulated Rocktex is packed in 40 lb. paper bags. Each bag will cover 20 sq. ft. gross area, when installed 3⅝-in. thick over flat areas.

Rolled Rocktex is furnished in rolls 15 in. wide, the length depending upon the thickness. Rolled Wool is furnished 1 in., 1½ in. and 2 in. thick.

Rocktex Bats are manufactured 15 in. wide by 18 in. long by 3⅝ in. thick. Bats are packed 9 to a 30-in. carton. One carton will cover a net area of 16⅞ sq. ft., but will cover 18 sq. ft. gross area of wall or ceiling.

Easy to Apply

All types of Rocktex are easy to install in new construction. It is packed into place lightly but firmly. A laborer can insulate 900 sq. ft. to 1000 sq. ft. per day.

How Distributed

Rocktex is handled by exclusive approved, applying contractors in all principal cities. Rocktex stocks are carried by dealers in all sections of the country and any retail lumber dealer can promptly obtain a supply of Rocktex.

Specifications

New Construction—*Walls*—Rocktex Loose Wool to be packed to the full depth of the outside wall studs.

Alternate—Rocktex Rolled Wool or Rocktex Bats.

Ceilings—Rocktex Loose Wool to be packed above the top floor ceiling. Insulation to be 4 in. thick.

Alternate—Rocktex Rolled Wool or Rocktex Bats.

Sloping Roof—Rocktex Loose Wool to be packed between the roof rafters not less than 4 in. thick. Insulation to be held in place with a suitable backing as approved by the architect.

Alternate—Rocktex Bats or Rocktex Rolled Wool to be fitted between rafters and held in place with a lacing of wire, or a suitable backing as specified by the architect.

Existing Structures—*Walls*—Rocktex Granulated Wool to completely fill the outside hollow walls.

Ceilings—As stated under new work.

Sloping Roof—Rocktex Granulated Wool to fill all sloping areas to full depth of the rafters, between roof boards and lath and plaster.

Samples

Samples of Carey Rocktex Insulating Wool and descriptive literature will be furnished upon request.

SAMUEL CABOT, INC.

Building Insulation

141 Milk Street, BOSTON, MASS.

For Branch Offices and Agents, see our pages on Stains and Collopakes

Products

HEAT-INSULATING and SOUND-DEADENING "QUILT."

For Shingles, Stains, Collopakes (for every paint use), Waterproofings, Wood Preservatives, see File Index.

Cabot's

Heat-Insulating Sound-Deadening

"Quilt"

Samuel Cabot Inc.

Cabot's Heat-Insulating and Sound-Deadening "Quilt"

Uses—For insulating houses and other buildings to make them warm in winter and cool in summer; for insulating cold storage and ice houses; refrigerators; for deadening sound in floors and partitions of apartments, hotels, hospitals, schools, etc.

Cabot's "Quilt" Applied to Walls, for Heat Insulation

Description—Cabot's "Quilt" is a felted matting of Zostera Marina, a marine plant, stitched between two layers of very strong Kraft paper. Zostera Marina forms a structure full of tiny dead air cells which are the best insulation known irrespective of cost, and "Quilt" is exceedingly low in cost. Tests by the Bureau of Standards show that Cabot's Quilt is in the very highest brackets of insulating efficiency.

Permanent—Cabot's "Quilt" is unaffected by moisture and will not rot, deteriorate, get foul or harbor insects or vermin. It retains its full insulating value and so maintains summer coolness and winter warmth (with attendant savings in fuel) for the entire life of the building. This is proved by a successful experience of more than 40 years.

Fire Resistant—Standard "Quilt" is highly fire resistant. This has been proved in many buildings. Anti-Pyre "Quilt" has a specially treated fire-resistant paper and meets the rigid requirements of fireproof construction.

Flexible—Being flexible, "Quilt" will fit any surfaces, around corners, projections, or jogs, without danger of cracking, or impairment of its insulating efficiency.

Application—"Quilt" is easily cut with an ordinary knife or shears and can be applied at the lowest labor cost, requiring no skill.

Widths—"Quilt" is now made in 18-in. width for quick application between studs and roof rafters, as well as in the standard 36-in. width.

Thickness	Approx. thickness, in.	Width, in.	Shipping weight, lbs. per roll	Sq. ft. per roll
Single Ply	1/3	36 18	40 20	250 125
Double Ply	1/2	36 18	65 32½	250 125
Triple Ply	2/3	36 18	90 45	250 125
Inch "Quilt"	1	36 18	65 32½	125 63

Special Types—Anti-Pyre—fire retarding "Quilt"; Waterproof "Quilt" made with waterproof paper covering; Asbestos "Quilt" (Single, Double and Triple-ply only) covered with asbestos paper.

Standard Method of Application and Conduction Values

Following are given 10 standard methods of applying Cabot's "Quilt" for heat insulation together with the K, or heat conduction values, figured in all cases for Double Ply (XX) "Quilt." Conductivities will be decreased still further by the use of Triple Ply (XXX) or Inch "Quilt."

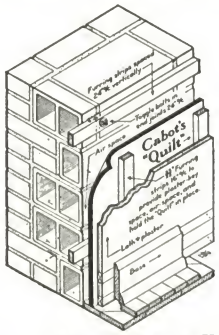


Fig. 1. Brick Veneer on Hollow Tile Wall Insulated with Cabot's Double Ply Quilt

K (conductivity): **0.123**

(If Quilt is omitted K equals 0.186)

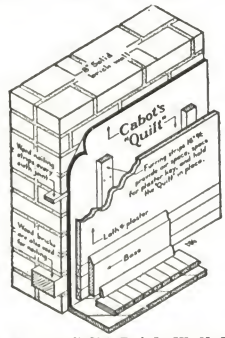


Fig. 2. 8" Solid Brick Wall Insulated with Cabot's Double Ply Quilt

K (conductivity): **0.179**

(If Quilt is omitted K equals 0.250)

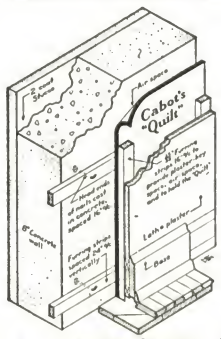


Fig. 3. Stuccoed Concrete Wall Insulated with Cabot's Double Ply Quilt

K (conductivity): **0.160**

(If Quilt is omitted K equals 0.285)

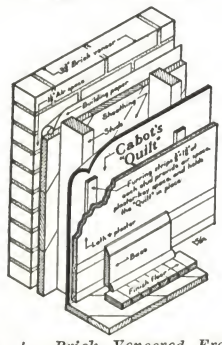


Fig. 4. Brick Veneered Frame Wall Insulated with Cabot's Double Ply Quilt

K (conductivity): **0.122**

(If Quilt is omitted K equals 0.207)

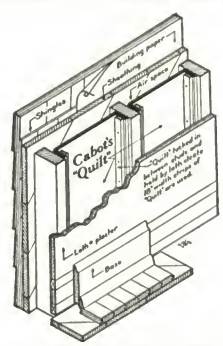


Fig. 5. Shingled Frame Wall Insulated with Cabot's Double Ply Quilt

K (conductivity): **0.152**

(If Quilt is omitted K equals 0.252)

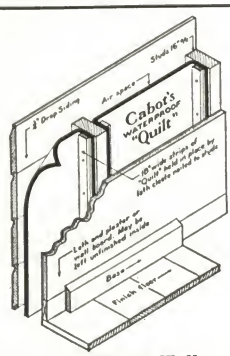


Fig. 6. Low Frame Wall. Economical Construction. Insulated with Cabot's Double Ply Quilt

K (conductivity): **0.168**

(If Quilt is omitted K equals 0.318)

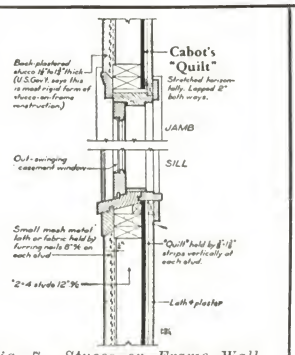


Fig. 7. Stucco on Frame Wall. Insulated with Cabot's Double Ply Quilt

K (conductivity): 0.191

(If Quilt is omitted K equals 0.380)

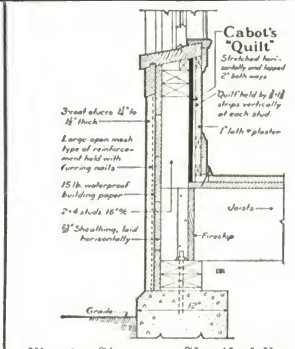


Fig. 8. Stucco on Sheathed Frame Wall Insulated with Cabot's Double Ply Quilt

K (conductivity): 0.167

(If Quilt is omitted K equals 0.296)

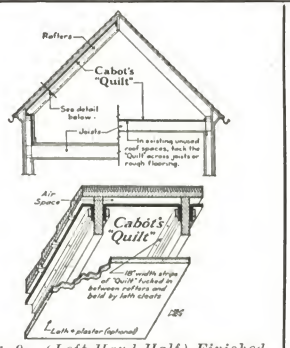


Fig. 9. (Left-Hand Half) Finished Attic Insulated with Cabot's Double Ply Quilt Between Rafters

K (conductivity): 0.161

(If Quilt is omitted K equals 0.288)

(Right-Hand Half) Unfinished Attic. Unheated

K (conductivity): 0.141

(If Quilt is omitted K equals 0.262)

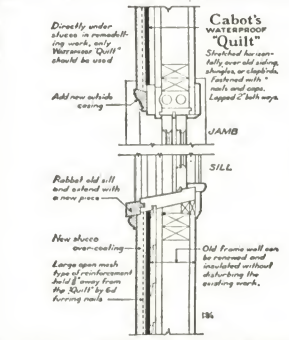


Fig. 10. Stucco Over Old Wooden Frame Wall (Remodeling) Insulated with Cabot's Double Ply Quilt

K (conductivity): 0.186

(If Quilt is omitted K equals 0.283)

Fuel Saving

The approximate fuel saving obtained by heat insulation with Cabot's "Quilt" as shown and specified above may be secured as follows: Buildings with conductivities (when insulated) of 0.16 will show a heat saving of approximately 39-43 per cent, as compared to uninsulated structures. In some cases the saving is even greater.

Tests

Conductivity and heat saving values of Cabot's "Quilt" are fully covered by tests made at the U. S. Bureau of Standards. (U. S. Letter Circular No. 227, Bureau of Standards, Washington, D. C., and Tests made at Massachusetts Institute of Technology.) Copies of these will be forwarded on your request.

Residence in West Reading, Pa.
WYOMISSING DEVELOPMENT CO., Builders

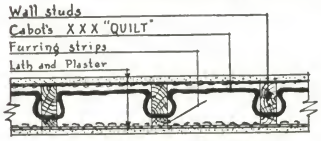
Cabot's Triple Ply "Quilt" used in all outside walls and over second floor ceiling. Roof stained with Cabot's Creosote Shingle Stains, clapboards painted with DOUBLE-WHITE and blinds with Cabot's Green Gloss Collopakes

Cabot's "Quilt" for Sound-Deadening

Thousands of apartment houses, musical studios, schools, hospitals, hotels, residences, etc., have been successfully sound-deadened in floors and partitions during the last forty years, protecting occupants from din and disturbance in adjacent apartments. Being used here under actual building conditions, this constitutes the most conclusive proof of the sound-deadening efficiency of "Quilt." Its structure gives it the property of absorbing and dissipating sound-waves, much as a blotter absorbs ink.

Instruments have now been developed for measuring sound transmissions, and following are results of some tests upon various methods of construction. The reduction figure in each case refers to similar construction not deadened.

Sound-Deadening Partitions (Wood Construction)



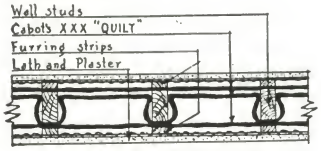
SOUND REDUCTION 67%

Left:

Specifications—In this case a layer of Cabot's XXX (Triple-Ply) "Quilt" is wrapped around the stud on one side before lathing. The "Quilt" is carried away around each side of the stud and fastened with nails and caps as shown. Furring strips are then applied to face of studs and lath applied to these strips, leaving the "Quilt" between. A sound reduction of 67% results from this construction.

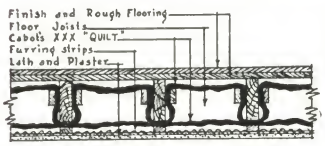
Right:

Specifications—In this type of construction, three layers of Cabot's XXX (Triple-Ply) "Quilt" are applied as shown. First, a single layer is wrapped around the studs, then two flat layers on each face of studs. Furring strips are then applied on both sides and then lath and plaster. This construction effects a sound reduction of 91%. Only 9% of the original sound transmitted, without insulation, can penetrate.



SOUND REDUCTION 91%

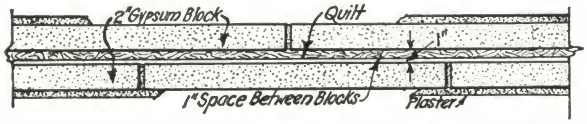
Sound-Deadening Floors (Wood Construction)



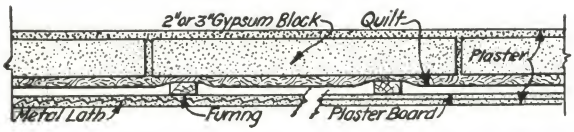
SOUND REDUCTION 60.6%

Specifications—In this case essentially the same method is employed, as above, except that here the "Quilt" is applied beneath the floor timbers, bent around each one and secured in place by light lath or strips as shown. An additional layer of "Quilt" is stretched loosely along the bottom of the timbers which are then furred, lathed and plastered in the usual manner.

Sound-Deadening Partitions in Fireproof Apartments, Office Buildings, etc.



Specifications—For most effective sound-proofing with Gypsum Block Partitions, lay up double partitions of 2-in. Gypsum Block with 1-in. space between, within which Double-Ply or Triple-Ply Cabot's "Quilt" is to be hung. Plaster directly on outside of blocks.



Specifications—With single Gypsum Block Partitions nail "Quilt" vertically to one or both sides, apply furring strips or metal lath and plaster, or apply plaster board to outside surfaces.

Sound-Deadening in Moving Picture Sound Studios, etc.

Cabot's "Quilt" is finding a constantly increasing use in the insulation of Sound Studios for sound pictures and other special cases where complete silence must be secured. Write us for special data.

Acoustical Correction, Elimination of Echo

Cabot's "Quilt" has wide use in this connection, for acoustical correction of theatres, office buildings, churches, etc. Problems of this kind are individual in nature. Our engineers will be glad to assist you on problems of this kind.

Samples and Co-operation with Architects

Samples of all types of "Quilt" with full information promptly sent on request. We are always ready to co-operate fully, without obligation, on any question of heat insulation or sound deadening and to place our experience of over 40 years at your disposal.

THE EAGLE-PICHER SALES COMPANY

INSULATION DIVISION

Eagle Insulation for Homes

GENERAL OFFICES
Temple Bar Building, CINCINNATI, OHIO

BALTIMORE, MD., 359 Guilford Ave.
BOSTON, MASS., 11 Wharf St.
BUFFALO, N. Y., 39-43 Mechanic St.
CHICAGO, ILL., 4401 So. Western Ave.
CINCINNATI, OHIO, 1030 Broadway
CLEVELAND, OHIO, Ninth and Broadway
DALLAS, TEX., 2215 Laws St.
DETROIT, MICH., 1627 W. Fort, Room 406
JOPLIN, MO., C & Porter Sts.
KANSAS CITY, KAN., 27 Southwest Blvd.
MINNEAPOLIS, MINN., 437 Harding St., N. E.
NEW ORLEANS, LA., 411 So. Peters St.
NEW YORK, N. Y., 420 Lexington Ave.
PHILADELPHIA, PA., 15 Lombard St.
PITTSBURGH, PA., 1713 Liverpool St., N. S.
ST. LOUIS, MO., 1218 Olive Street

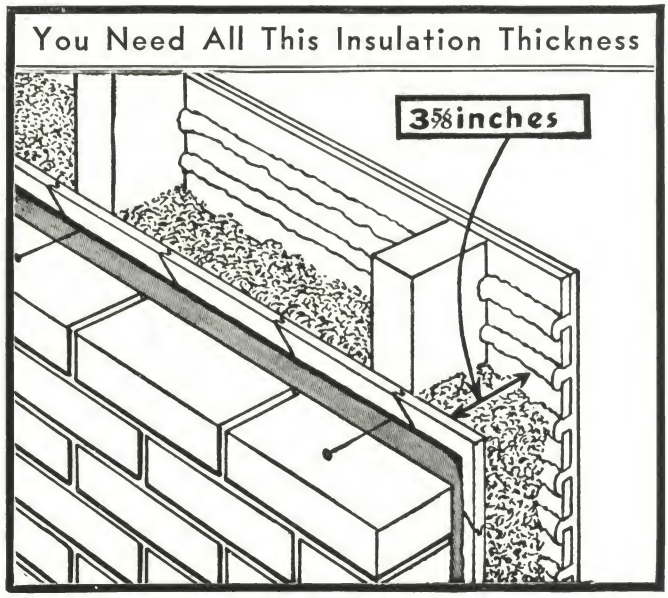
For Lead Pigments for Paint, see File Index

EAGLE HOME INSULATION IS THICK, LIGHT-WEIGHT, EFFICIENT, FIREPROOF

Wall-thick, non-structural, extremely light in weight, non-corrosive and fireproof, Eagle Home Insulation also possesses a conductivity rating which places it among the most efficient of all commercially available insulations.

Widely distributed in the form of "granulated wool" (Type H-1) for pneumatic application in new and existing construction, as well as remodelling projects. Also available in "bat" form (Type H-3), primarily designed for new construction.

Eagle Home Insulation, because of its light weight, fluffiness, and *full* wall thickness, provides maximum effectiveness. Its low thermal conductivity is adequately substantiated by the U. S. Bureau of Standards, whose tests show that at a mean temperature 103° F., it has a conductivity rating of 0.27 B.t.u. per sq. ft. per hour per degree temperature difference, per inch thickness. In its *applied* thickness—3⅝ in.—Eagle Home Insulation has a thermal conductance of only 0.074 B.t.u.



Fireproof: Accepted by Underwriters' Laboratories

Eagle Home Insulation is clean mineral fibre, made from flint-rock, limestone and other silica bearing minerals. These are fused at high temperatures, and "blown" into a fluffy, "wooly" material which is honeycombed with millions of tiny dead-air cells so necessary to effective insulation. Eagle Insulation is absolutely fireproof. Not to be confused with "fire-safe" or "fire-resistant" materials, it simply cannot burn. Approved as fire-retarding medium by Board of Buildings, New York, N. Y. Authentic tests by Underwriters' Laboratories show that Eagle Insulation is not only fireproof, but is a non-conductor of electricity and completely impervious to lightning. May be used with perfect safety about wiring.

Eagle Home Insulation Is Absolutely Fireproof

Containing no vegetable matter, Eagle Insulation is rotproof. It will never deteriorate, but will outlive the building in which it is installed.

Made of springy fibers which do not break or crumble, Eagle Home Insulation never settles, but stays in place so that its efficiency is never impaired.

It is outstanding for lightness in weight. As applied it weighs 1½ to 1¾ lbs. per sq. ft.

For New Construction and Remodelling

Eagle Insulation is readily installed in any type of building, new or old, frame, brick, or stucco.

For insulating new structures or those already standing, Eagle Insulation is blown into place in sidewalls and attic by an ingenious pneumatic machine. No alterations are necessary.

For houses under construction, it is also available in convenient "bat" form—rectangular pads 15 by 18 ins. and 3⅝ ins. thick, which fit snugly between studdings and joists. Irregular spaces around doors or windows may be easily filled by cutting the "bats" to exact size.

Either method of installation provides the adequate, heat-retarding efficiency for which Eagle Insulation is noted.

Every Eagle contractor is skilled and competent to do a thoroughly adequate insulating job. He has been selected only after The Eagle-Picher Sales Company has thoroughly investigated and approved his integrity and capability.

Assures Comfort and Promotes Health

Eagle Home Insulation so effectively retards heat flow that, in summer, it usually keeps a home from 12° to 15° cooler than outside temperature. Even upstairs rooms (usually unbearable) become delightfully cool when protected with Eagle Insulation. They remain

Eagle Insulating Wool Easily Blown into Spaces Between Wall Studdings

Eagle Wall-thick Bats (Type H3) Quickly Installed in New Construction

within approximately 1° of the temperature of lower rooms.

In winter, it is easy to maintain a healthful temperature in all rooms, because the heat of the furnace stays *within* the house instead of seeping through to waste itself outdoors.

There are no "cold spots" in an Eagle-insulated home; temperature is balanced and healthful throughout the entire building.

Dirt and dust do not penetrate thick Eagle Insulation. Neither can drafts and icy winds; thus danger of "flu" and colds in winter is lessened considerably.

Saves Up to 40% in Yearly Fuel Bills

Canadian Government authorities estimate that the average house burning eight tons of coal per year would require only five if it were properly insulated. Specific savings made possible by Eagle Home Insulation vary according to type of structure insulated. An actual case which will serve as an example is that of a nine-room frame house, where the fuel savings averaged $116.20 per year, and in less than six years had paid for cost of the insulation. Fuel savings usually run from 30% to 40%, and usually cover the original cost of insulating within three to five years.

A second important economy is the complete prevention of "wall sweating." This action occurs in walls when warm air strikes them, after they have been made cold by the influx of cold air from the outside. The result is a condensation of moisture which leaves ugly spots. Costly redecorating is necessary to remove them.

But with thick Eagle Insulation between the inner and outer walls, the cold air cannot penetrate inward. Hence "wall sweating," with its inconvenience and expense is absolutely prevented.

Reduces Investment in Heating Equipment

Because a greater part of the heat generated in an Eagle-insulated home is utilized within the house (the

Eagle Insulating Wool Blown by Special Pneumatic Process into Spaces Between Joists in Attic Floor (About 4 In. Thick)

only appreciable loss of heat being at doors and windows) a much smaller initial investment in heating equipment is made possible. The heating plant is not handicapped in warming the building; therefore the furnace, as well as radiators, can be smaller and less costly.

This saving in capital invested for heating apparatus releases additional funds for use elsewhere in the building. Often the saving is sufficient to cover the full cost of insulating.

Write for Sample

Eagle Home Insulation, despite its low conductivity rating, does not cost as much as many insulations on the market. Write to THE EAGLE-PICHER SALES COMPANY, Insulation Division, Cincinnati, Ohio, for a sample and the name of the Eagle Contractor in your city.

SPECIFICATIONS

Type H-1 Home Insulation (Applied Pneumatically)

Specifications for Application

Note: These specifications are intended to cover the most common types of installations. For specific recommendations concerning any insulating project, write to THE EAGLE-PICHER SALES COMPANY, Insulation Division, Cincinnati, Ohio.

Work Included

The work contemplated under this specification shall include all materials, labor, equipment and service necessary for and reasonably incidental to the installation of Eagle Home Insulation by the pneumatic method to completely insulate the portion of the building as shown and noted on the drawings or herein specified.

This contractor shall make all openings required to execute his work and shall do all patching of such openings after his materials have been installed. He shall furnish and set all work not included by other contractors, which may be required in connection with the installation of his materials.

(Insert here detailed specification applying to the particular job.)

Work Not Included

Other contractors will furnish and install the following work as specified under other divisions and other specifications text which this contractor shall read so as to ascertain what is called for therein: (The paragraphs which do not apply to the job at hand are to be omitted.)

(a) Furnish and erect all metal or wood lath, insulating lath or plaster lath as specified, on all walls which are to be insulated and finished with plaster, as specified under..... (state where specified).

If metal or wood lath, such lath adjoining ceiling, window sills, etc., on all exterior walls to be insulated will be temporarily secured so that the home insulation contractor may readily remove it to allow the installation of his material. The home insulation contractor will replace and secure such lath.

Materials and Workmanship

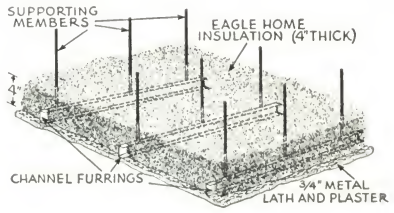
All insulating materials placed under this specification and contract shall be those manufactured by THE EAGLE-PICHER SALES COMPANY and shall bear the manufacturer's label. The insulation material shall be installed to a uniform density by the pneumatic method, except in areas where this method is impracticable or impossible. In such areas the insulation material shall be placed by hand. All insulation material shall be installed by ..... of..... (State name and address.)

Detailed Specifications to Be Inserted Under "Work Included" Where Indicated

No. 1 Finished Attics

The insulating material shall be installed in attic spaces as follows:

The authorized Eagle-Picher contractor shall apply continuously to backs of studs of knee walls, Sisalkraft or Diamond Cord Paper, secured in place.



Eagle Insulation shall be installed between ceiling beams over ..... (state) story to extend from exterior walls to base of knee walls, up knee walls to intersection with rafters and up rafters to and across attic ceiling, etc. It shall also be installed in all gables, dormers and closets which adjoin finished attic portions, to provide a continuous blanket of insulation over entire roof area. The insulation shall be installed to a depth of not less than 3⅝ ins. between ceiling beams and to the full depth of studs in knee walls and gables, etc., and the full depth of rafters.

No. 2 Unfinished Attics

(Insulation to be installed between rafters to a depth of not less than 3⅝ ins.)

Eagle Insulation material shall be installed in attic spaces as follows:

The authorized Eagle-Picher contractor shall apply between all rafters over entire roof area, Sisalkraft or Diamond Cord Paper, secured in place not less than 3⅝ ins. from underside of roof sheathing or single lath. He shall also supply to studs in gable ends, similar paper secured in place and so installed as to allow the placing of the insulating material behind it to a thickness of not less than 3⅝ ins.

Eagle Insulation shall be installed between rafters and between studs in gable ends, etc., to provide a continuous blanket of insulation over entire roof area. The insulation shall be installed to a thickness of not less than 3⅝ ins.

No. 3 Unfinished Attics

(Insulation to be installed between rafters to their full depth.)

Eagle insulation shall be installed in attic spaces as follows:

The authorized Eagle-Picher contractor shall apply to underside of rafters and to face of studs in gable ends, a suitable wall board, celotex or masonite board secured in place. (If joints are to be battened, so specify.)

Eagle Insulation shall be installed between rafters and between studs in gable ends, etc., to provide a continuous blanket of insulation over entire roof area. The insulation shall be installed to full depth of the rafters and full depth of the studs.

No. 4 Unfinished Attics

(Insulation to be installed between ceiling beams to a depth of not less than 3⅝ ins.)

Eagle Insulation shall be installed in attic spaces as follows:

Eagle Insulation shall be installed between ceiling beams to provide a continuous blanket of insulation over entire ceiling area of ..... story (state first, second, or third). The insulation shall be installed to a thickness of not less than 3⅝ ins.

No. 5 Exterior Walls

(New construction. Metal or wood lath on wood frame.)

Eagle Insulation shall be installed in all exterior walls [except.....(state exception if any).....] to completely fill such walls from top of foundation wall to roof.

The insulation shall be installed to completely and thoroughly fill to a uniform density all walls specified. If insulation is to be installed before plaster is applied, the contractor shall partially cover each space between two studs during the time it is being filled, with a sheet of insulating board, of sufficient width to span the studs and provided with a hole near the upper end to receive the nozzle of the blowing equipment.

No. 6 Exterior Walls

(New construction. Gypsum plaster lath or insulating plaster lath, etc., on wood frame.)

Eagle Insulation shall be installed in all exterior walls, [except.....(state exceptions if any).....], to completely fill such walls from top of foundation wall to roof.

The insulation shall be installed to completely and thoroughly fill to a uniform density all walls specified.

No. 7 Suspended Ceilings

Eagle Insulation shall be installed over suspended ceilings by the pneumatic process to a depth of 4 in. and a uniform density (see drawing above).

A Few of the Many Buildings in Which Eagle Insulation Is Paying Big Dividends

. . . . . Uniform Comfort Assures Greatest Return from Buildings

Paramount Theatre, Montgomery, Ala.

Euclid Manor Apartments, Cleveland, Ohio

Walnut Apartments, Kansas City, Mo.

Lubrite Refining Company, St. Louis, Mo.

Lincoln Telephone & Telegraph Co. Bldg., Lincoln, Neb.

Federal Reserve Bank of Atlanta, Ga.

Kroger "Drive-In" Market, Indianapolis, Ind.

EHRET MAGNESIA MANUFACTURING COMPANY

VALLEY FORGE, PA.

NEW YORK PHILADELPHIA CHICAGO

EHRET'S HEAT SEAL INSULATING WOOL

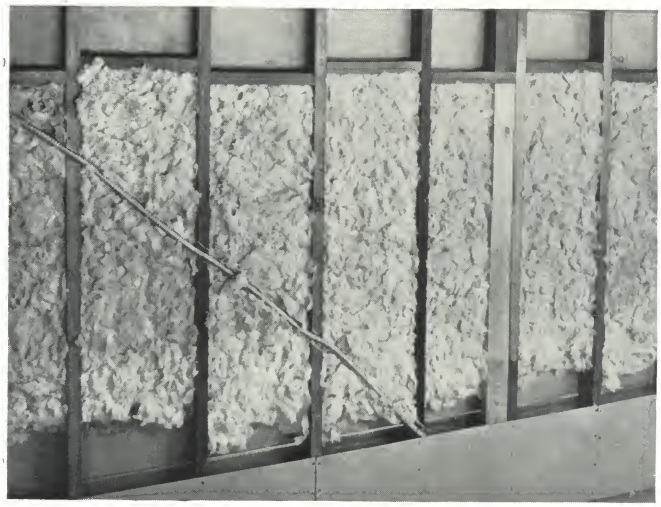
For Homes and Building Structures

Ehret's Heat Seal Insulating Wool is a most effective heat saver. Containing only finely fiberized natural mineral materials, it is absolutely fireproof, non-corrosive, will not mold or decay, is odorless and completely vermin-proof. It is of very soft texture and perfectly free from sharp particles and dust.

Besides preventing loss of heat in cold weather, it will keep out the heat of summer. It will soundproof against noise, either from outside or inside of the building or room. Completely filling enclosed spaces, it blocks off air flues and forms a very definite fire retarder. Lath marks on ceilings and walls will not occur if the spaces back of them are filled with Ehret's Heat Seal Insulation.

Ehret's Heat Seal Insulating Wool is furnished in three forms:

Type 1, Loose Wool, is so prepared that it can be easily worked and applied by hand. It may be packed into open joist spaces where it will cling and remain in position. Lath or wallboard is then placed over it. (See illustration.) This feature means a considerable saving in cost over the bat type. It is best when packed to a density of 10 pounds per cubic foot. It has a covering capacity of 2400 square feet one inch thick per ton. It is furnished in burlap or paper bags containing 35 lbs. each.



Ehret's Heat Seal Insulating Wood Packed into a Wall Showing Its Self-supporting Properties

Type 2, Granular, consists of individually formed nodules or pellets which can be freely poured into spaces. It is especially recommended for filling in between joists over ceilings and for pouring into the walls of buildings already erected. One ton has a capacity of 3000 square feet one inch thick of a density of 8 pounds per cubic foot. It is supplied in paper bags containing 40 pounds each, or in burlap bags containing 35 pounds each.

Type 3, Bats, or blocks, have a compact, felted construction of sufficient thickness to completely fill the spaces between 2x4" studding. Cut into blocks measuring 15x23", they will snugly fit between studding spaced on either 16" or 24" centers. Also furnished in 15x18" size. They are easily handled and installed. The bats are packed in convenient sized cartons containing either 12 pieces of the 15x23" size or 9 pieces of the 15x18" size.

RECOMMENDATIONS

Exterior Walls

New Construction—The walls should be completely insulated from the foundation to the roof. Type 1, Loose Wool, is to be preferred. Before lath or wallboard is placed, pack the loose wool against the sheathing, filling the entire space up level between the studding. The wool should be tamped until the whole is of a uniform density.

Type 3, Bats, may be used, if desired, in which case the irregular spaces must be carefully filled with specially cut and fitted pieces.

Old Buildings—Use Type 2, Granular. This can be poured in at the top of the wall spaces through openings formed by removing clapboards or other small sections of the exterior surface materials. A special pouring hopper, which fits the opening, will fill in the insulation with a minimum of cost. This method of pouring in the insulation is far more economical than the pneumatic or blowing system. It also eliminates the possible damage to gardens, shrubs, etc., when long lengths of air hose are dragged over them.

Interior Partitions

New Construction—After the lath or wallboard is placed on one side of the studding, Type 1, Loose Wool, or Type 3, Bats, can be installed in the same manner as for exterior walls.

Old Buildings—Type 2, Granular, should be poured in through narrow openings made in one side of the partition, at the tops of the joist spaces.

Floors—Interior and Attic

New Construction—Type 1, Loose Wool, packed in, or Type 2, Granular, poured in, is recommended. The work being done before the flooring is laid.

Old Buildings—Type 2, Granular, should be poured in through openings made by removing occasional boards.

Roofs—Sloping

New Construction—Where the underneath side of the roof is unfinished apply Type 3, Bats, for both new construction and old buildings. A continuous retaining surface of wallboard should then be nailed over the studding. The bats fit so snugly between the rafters that they will stay in position until the wallboard can be nailed on. For those portions of roofs which may slope down below the attic floor, fill in with Type 2, Granular.

Old Buildings—If the underneath side of the roof is finished, remove a row of shingles on each side of the ridge and pour in Type 3, Granular, with the use of the special pouring hopper.

Roofs—Flat

Where the underneath side is unfinished, apply Type 3, Bats, for both new construction and old buildings. A continuous supporting surface of wallboard should then be nailed to the rafters.

Where the underneath side is finished, Type 3, Bats, can be applied in new construction before the lath is nailed on. For old buildings, openings can be made through the roof and Type 2, Granular, poured in.

Attic Rooms

For new construction or old buildings the top area, over the ceiling, can be filled with Type 2, Granular. The side, or knee walls, can be insulated with Type 1, Loose, or Type 3, Bats, with a continuous retaining surface of wallboard, or other material, nailed to the studding.

Dormers

If unfinished, insulate the heads with Type 3, Bats. If finished, use Type 2, Granular.

Suspended Ceilings

For new or present construction, pour into the upper surface a 4 in. thick layer of Type 2, Granular.

AN IDEAL INSULATOR AND SOUND ABSORBER FOR AIR CONDITIONING DUCTS

NICOLFELT

Patent No. 2,019,233

The most practical and scientifically effective insulation material for lining or covering air conditioning ducts.

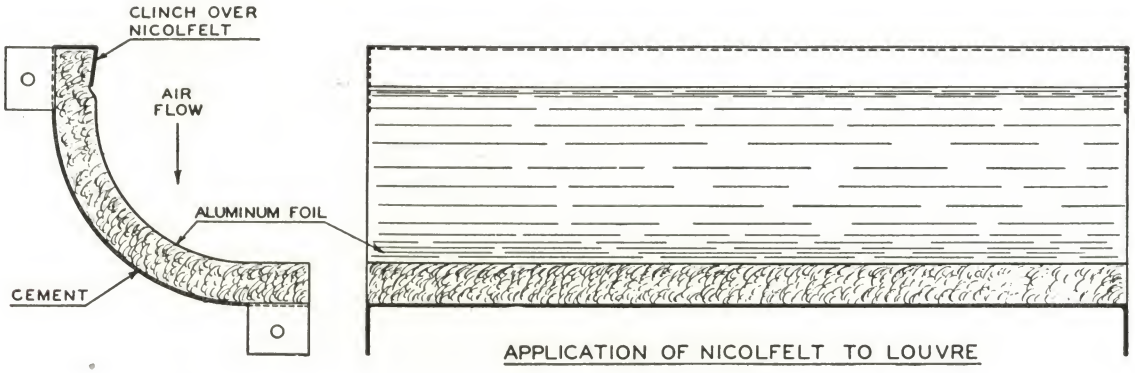
Serving a double purpose, it insulates against loss of heat as well as preventing the transmission of sound.

Making use of the dual effect of very low thermal conductivity and very high surface resistance, the over-all heat transmission is so low that a lesser thickness is required than for any other material suitable for the same purpose.

Easily cemented to the metal surfaces in continuous, flexible sheets, it eliminates joints at the duct corners and between the numerous small blocks of materials like cork board.

As NICOLFELT is provided with a durable, metalized surface firmly cemented to one side, the finished installation is completed during the single operation of cementing into place. No extra surfacing or sealing operation is necessary and no painting is required.

The application can be made either as an inside lining or as the exterior covering of ducts. When used as lining, the noise prevention is most effective as the sound vibrations cannot impact against the metal walls and be carried along the length of the duct. The thin layer of NICOLFELT will permit smaller clearances being required to accommodate the ducts.



APPLICATION OF NICOLFELT TO LOUVRE

Thickness of NICOLFELT, in.	3/16	1/4	1/2	3/4
Weight per sq. ft., oz.	3	4	6	9
Thermal transmission, B.t.u. per sq. ft. per hour per degree temperature difference	.395	.360	.267	.209

EQUIVALENT THICKNESSES, IN.				
NICOLFELT	3/16	1/4	1/2	3/4
Corkboard	.46	.58	1.00	1.39
Standard Hair Felt	.38	.46	.75	1.00

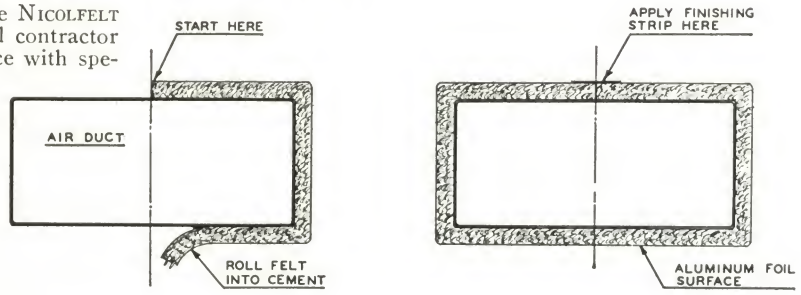
COMPARATIVE SOUND ABSORPTION COEFFICIENTS

Frequency	128	256	512
NICOLFELT, 1/2" thick	.18	.24	.36
Nashkote A, 1/2" thick	.05	.13	.25
Nashkote A, 3/4" thick	.09	.16	.27
Acousti Celotex, 13/16" thick	.15	.24	.62

METHODS OF APPLICATION

On all ducts which are to be internally lined the NICOLFELT is to be fitted and cemented in by the sheet metal contractor when the ducts are being fabricated, in accordance with special instructions.

When NICOLFELT is to be applied to the exterior surface of ducts the following procedure is recommended: Thoroughly coat the entire outer surface of the sheet metal with special NICOLFELT CEMENT brushed on freely and permitted to dry for a few minutes. Cut the NICOLFELT in pieces 36" wide (standard width of the roll) by a length sufficient to go entirely around the four sides of the duct. Starting at the top centerline of the duct, imbed the NICOLFELT in the cement and, rolling the felt over the surface clear around the duct, press it firmly into the cement by progressively brushing the hand over it. All butt joints are sealed with 1½" wide special finishing strips cemented on.



APPLICATION OF NICOLFELT TO DUCT EXTERIOR

APPLICATION OF NICOLFELT TO DUCT INTERIOR

SOME OTHER EHRET INSULATIONS

85% Magnesia Pipe Coverings and Blocks—the Federal Government standard insulation up to 600° F.

Vulcanite Cement—an efficient plastic insulation covering 40 sq. ft. 1 in. thick per 50 lbs.

GENERAL INSULATING & MFG. CO.

ALEXANDRIA, INDIANA

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Applying Sealal Between Joists Over Top Floor Ceiling

Gimco ROCK WOOL PRODUCTS

SEALAL ROCK WOOL BAT FULL WALL-THICK HOUSE INSULATION

The finest features of all Gimco insulators were combined to produce this semi-rigid, yet resilient and fluffy bat. The result is a "plus" value insulation containing sufficient "spring" and structural strength to hold itself in place without being secured by fasteners.

Sealal Bats Are Inherently Fireproof

Characteristics of Sealal

Gimco Sealal is one of the most convenient and desirable materials available for insulating new frame construction and unfinished areas of existing structures. Sealal Bats are light brown, fluffy blocks of moistureproof rock wool fibers felted together by Gimco's patented process.

Application

Sealal is installed between studding, joists and rafters by merely wedging in place. Irregularly shaped pieces may be easily cut with a large knife or carpenter's saw.

Sealal Forms a Uniform Continuity of Insulation

Sealal Is Fireproof and Moistureproof

Sealal has been approved by Underwriters' Laboratories. It is made entirely of metasilicate stone, containing no artificial supports, and absolutely cannot burn.

Moistureproof Sealal will float lightly on the surface if placed in water, will *not* sink or absorb moisture.

Shipping Data

Sealal is made in two sizes: (1) 15x18 in. x wall thick; (2) 15x23 in. x wall thick. Shipped in cartons, 10 bats to a carton. 10 small bats contain 18¾ sq. ft. and insulate 20 sq. ft. of wall or ceiling area; 10 large bats contain 23.96 sq. ft. and will insulate 25½ sq. ft.

Average density: 4¾ lbs. per cu. ft.

Average carton weights: Small bats 26 lbs.; large bats 32 lbs.

"BLOWN" INSULATING PROCESS FOR EXISTING BUILDINGS

This process is the installation of nodulated rock wool by a pneumatic conveyor. The blowing equipment is parked at the curb or on the drive. Openings into wall spaces are made at the proper locations and then the nodulated rock wool is blown under uniform pressure through a large hose and packed to the proper density between studdings. Insulation is applied in the attic by taking the hose into that section and blowing wool to a depth of 4 in. between the joists.

The blowing process is the only positive method of filling inaccessible places, as the rock wool is forced into place under constant pressure. It is a clean, quick, thorough application, requiring no alterations to the structure and there is little or no litter made about the building.

Almost all types of construction should be insulated to full wall thickness to achieve maximum comfort in summer and winter.

Blowing Wool Into Wall Spaces to Full Wall Thickness

Gimco Rock Wool is fireproof, rotproof, moistureproof, verminproof and heads the U. S. Bureau of Standards list of efficiencies for an insulator with these qualities.

Write for the new General Catalog containing complete information about efficient Gimco insulators for industrial and domestic uses.

Gimco ROCK WOOL PRODUCTS

SAVES UP TO 50%
of YEARLY FUEL BILLS.
ADDS MATERIALLY
to HOME COMFORT by
EXTENDING the COMFORT ZONE
to the ENTIRE HOME

An Even Density of Wool Is Blown Between Joists

JOHNS-MANVILLE

EXECUTIVE OFFICES
22 East 40th Street, NEW YORK, N. Y.

Products

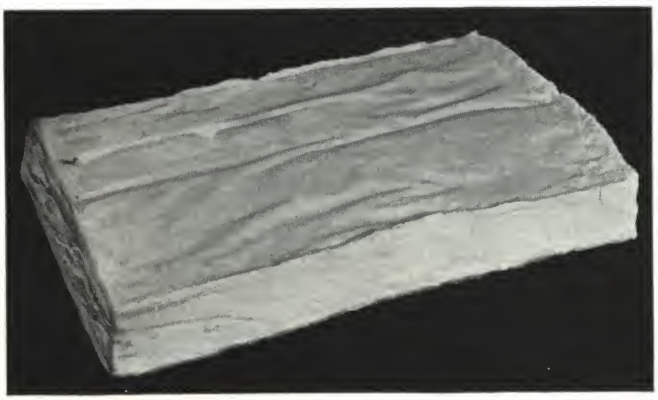
JOHNS-MANVILLE HOME INSULATION.

For the following Johns-Manville products see File Index: Acoustical Treatment and Sound Isolation; Asbestos and Asphalt Shingles; Built-up Roofs; Insulated Roofs; Insulating Board and Insulating Lath; Pipe Coverings and Insulations; Tile Flooring; Transite Sheets and Ventilators; Asbestos Wainscoting and Flexboard.

J-M ROCK WOOL HOME INSULATION

Johns-Manville Home Insulation, actually blown from molten rock, is a light, fluffy rock wool that is unsurpassed for the heat-proofing of practically any building, old or new. Because it is a natural non-conductor of heat, and because it prevents air circulation by filling the hollow spaces inside of the walls, J-M Rock Wool checks all three types of heat transmission (radiation, convection, conduction). It is a permanent, rot-proof, odorless material that absolutely will not burn.

Four inches of this material are equal, in resistance to heat and cold, to a solid stone wall 11 feet thick. As a result, when used to insulate a home completely, it reduces fuel bills as much as 35%, and makes upper rooms up to 15° cooler than before insulation. It is made in two forms, Type B and Type A.



J-M Type B Rock Wool Home Insulation
A highly efficient insulation that is permanent, rot-proof, and quickly and economically installed

In New Construction, J-M Type B Bats Are Installed in All Exterior Walls as Well as Across the Roof or Top Floor Ceiling

We invite you to bring your home insulation problems to us. The experience gained in the insulation of over 35,000 homes with J-M Rock Wool enables us to answer every requirement in the insulation of new or existing homes.

Type B (For New Construction)

J-M Type B Home Insulation is felted rock wool, formed into "bats," 15 in. wide x 18 in. long, or 15 in. wide x 23 in. long, and of full wall-stud thickness. These bats can readily be pressed between studs, ceiling beams or roof rafters and can easily be sawed, cut or even torn with the hands to fit around windows, doorways, pipes, plumbing stacks, outlet boxes, etc.

The convenient size of the bats enables the workman to cover large areas quickly and economically. Furthermore, Type B Home Insulation gives the home owner fullest protection against heat loss, for these bats are units of uniform thickness and density, and cannot be installed in such a manner as to leave voids or thin spots to waste heat. In addition, they provide added security from fire.

Efficient, Fireproof, Economical, J-M Type B Rock Wool Bats Are the Ideal Insulation for New Homes

Due to the reduced heat losses through the walls and roof which J-M Home Insulation effects, smaller radiators and smaller heating plant and piping can be installed. In typical cases it has been proved that by complete insulation with Type B Home Insulation, the total steam or hot water radiator requirements may be safely reduced to 60% of that required in uninsulated constructions.

Insulation is not ordinarily recommended where it makes direct contact with solid masonry walls because moisture gathers on the masonry. If such specification is required, the masonry wall must be thoroughly waterproofed wherever there is contact with the insulation and lath.

Type A
(For Existing Walls and Inaccessible Attics)

For insulating the walls and finished attics of existing homes, J-M Type A Home Insulation is recommended. Type A Home Insulation is nodulated rock wool, which, when blown into the wall and attic spaces under pneumatic pressure, fills every nook and cranny with heat resistant material. It can be installed in any building of wood, brick veneer, or stucco.

Walls of Existing Structures Are Insulated in the Manner Shown
Even brick and stucco offer no problem

In the Type A form, the rock wool is blown by compressed air into the spaces between studs in outer walls, between beams or rafters in attic floors and elsewhere as required to enclose completely the entire occupied area of the structure.

Home Insulation is blown only at low pressures (usually 2 lbs. per sq. in. or less). The pressure accomplishes two desired effects: It gives a dense, even pack (approximately 7 to 8 lbs. per cu. ft.) which insures maximum thermal efficiency; and it puts the material under an initial compression so that any subsequent

In New Construction, Top Floor Ceilings Are Rapidly Insulated with Type B Bats

vibration or building movement will not cause the insulation to sag, but, rather, to expand and thus retain its full insulating value. The U. S. Bureau of Standards conductivity figure for Rock Wool is given as 0.27 B.t.u. at a density of 10 lbs. per cu. ft. At 7 to 8-lb. density, this figure is conservative, since, within certain limits, conductivity is reduced by lighter density.

In houses already erected the blowing is done from outside—a brick, clapboard or shingle being removed temporarily, where necessary, for insertion of the hose nozzle conveying the rock wool.

J-M Approved Home Insulation Contractors

Proper application is just as important in insulating existing homes as is the material itself. For this reason, Approved Home Insulation Contractors who have the necessary equipment, have been selected in every community by Johns-Manville as qualifying in experience and business integrity to carry the J-M franchise. These companies are equipped to furnish and install Home Insulation to the complete satisfaction of the home owner.

The work is done from the outside, thus eliminating litter, dust or disturbance inside the house. The usual home activities continue without interruption. Shrubs, trees and lawns are protected where necessary. All work is done by well-trained, experienced, courteous men.

We shall be glad to give you the name of the Approved Contractor in your neighborhood.

J-M Home Insulation Crew "Blowing" an Occupied Frame House
Johns-Manville developed the blowing machine which first made it possible to insulate existing buildings with loose Rock Wool, and has insulated over 35,000 American homes by this method

Specifications for Type A and Type B Installations Are Given on the Following Page

SPECIFICATIONS FOR J-M ROCK WOOL HOME INSULATION

Specifications are given hereunder for both the Type A and the Type B forms. To each of these specifications is to be appended the proper paragraph or paragraphs selected from the Detailed Specifications as applicable to the particular job.

Note: *Johns-Manville does not recommend the use of Home Insulation in the furred spaces back of solid masonry walls. Experience has proved that these spaces should be left open, in order to prevent the moisture which penetrates such walls from coming in contact with the plaster or other interior finishes.*

TYPE B (Installed by Hand)

Since the furnishing and applying of this form of Home Insulation may be made a part of the Carpentry specification, the following has been prepared to be so included:

The contractor shall furnish and install Johns-Manville Home Insulation, Type B, to insulate completely the portions of the building as shown and noted on drawings or herein specified.

(Insert here detailed specifications applying to the particular job.)

TYPE A (Installed Mechanically)

Work Included

The work contemplated under this specification shall include all materials, labor, equipment and services necessary for, and reasonably incidental to, the installation of Johns-Manville Home Insulation to insulate completely the portions of the building as shown and noted on the drawings or herein specified.

This contractor shall make all openings required to install his work and shall do all patching of such openings after his materials have been placed. He shall furnish and set all work not included by other contractors which may be required in connection with the installation of his materials.

(Insert here detailed specifications applying to the particular job.)

Work Not Included

The following work will be furnished and installed as specified under other divisions of the specification, which this contractor shall read to ascertain what is called for therein:

All metal or wood lath, insulating lath or plaster lath as specified, on all walls which are to be insulated and finished with plaster. If metal or wood lath, such lath adjoining ceiling, window sills, etc., on all walls to be insulated shall be temporarily secured so that the Home Insulation Contractor may readily remove it to allow the installation of his material. The Home Insulation Contractor shall replace and secure such lath.

Materials and Workmanship

All insulating materials placed under this specification and contract shall be those manufactured by Johns-Manville Corporation and shall bear the manufacturer's label. In confined areas the insulating material shall be installed to an even density by the pneumatic method. In areas which are readily accessible for hand application, the insulation may be installed by that method, using the Type B Bats. All insulating material shall be installed by the *(state name and address of the Home Insulation Company).*

Detailed Specifications

No. 1. Finished Attics: (Types A and B)

The insulating material shall be installed in attic spaces between ceiling beams over *(state)* story to extend from exterior walls to intersection with rafters and up rafters to and across attic ceiling, etc. It shall also be installed in all gables, dormers and closets which adjoin finished attic portions, to provide a continuous blanket of insulation over entire roof area. The insulation shall be installed to a thickness of not less than 4 in. (Type A) or full bat thickness (Type B).

No. 2. Unfinished Attics: (Types A and B)

(Insulation to be installed between ceiling beams to a depth of not less than 4 in., or bat depth).

The insulating material shall be installed between ceiling beams to a thickness of not less than 4 in., or bat depth, to provide a continuous blanket of insulation over entire ceiling area of *(state)* story.

No. 3. Unfinished Attics: (Type A only)

(Insulation to be installed between rafters to their full depth.)

The insulating material shall be installed between rafters and between studs in gable ends, etc., to their full depth, to provide a continuous blanket of insulation over entire roof area. J-M PanLboard or Insulating Board *(state which)* shall be applied continuously to the underside of the rafters.

No. 4. Unfinished Attics: (Types A and B)

(Insulation to be installed between rafters to a depth of not less than 4 in., or bat depth.)

The insulating material shall be installed in attic spaces between rafters and between studs in gable ends, etc., to provide a continuous blanket of insulation over the entire roof area. The insulation shall be installed to a thickness of not less than 4 in. (Type A) or full bat thickness (Type B).

Note: It is recommended that single-corrugated paper with edges bent over and nailed to the inside face of the rafter shall be applied between all rafters over entire roof area, secured in place not less than 4 in. (or bat depth) from underside of roof sheathing or shingle lath.

No. 5. Exterior Walls: (Type B)

(New construction involving metal or wood lath on wood frame.)

The insulating material shall be installed in all exterior walls *(state exceptions if any)* to fill such walls completely from top of foundation wall to roof.

KEASBEY & MATTISON COMPANY

AMBLER, PA.

SALES OFFICES IN PRINCIPAL CITIES

K&M

Calicel INSULATION

(1) Industrial and Home Insulation.
(2) Acoustical Tile.*
(3) Acoustical Plaster.*
(4) Sound Deadening.*
(5) Calistone Roof Slabs.*
(6) Insulating Concrete Aggregate.*
(7) Refractory Insulation.
(8) Pulverized Fillers.

*For Pages Describing These Calicel Products, see File Index.

CALICEL (H) BUILDING INSULATION

In General

Calicel is most outstanding proof that the theories of insulating experts, for many years, have been entirely correct, these experts having agreed that the ideal insulation against the flow of heat is minute and confined air space, wherein the air space be entirely enclosed and so small that circulation cannot take place within it or heat radiate across it appreciably. Also that the confining air cell walls be highly polished to prevent penetration. Practical value, naturally, being dependent upon a sufficient quantity of cells being grouped together.

What a description of Calicel! Proof comes from viewing the accompanying highly magnified view of a particle of Calicel.

The Material

Calicel, basically, is highly expanded stone. It is a granular, mineral refractory insulator having extraordinarily low thermal conductivity and possessing remarkable sound absorbing or deadening qualities as well. It is a synthetic combined silicate of lime and alumina formed at temperatures in excess of 2000° F., and so cooled that the molten mass is expanded from 10 to 40 volumes into a highly cellular structure resembling sponge. The insulating value is due to this characteristic cellular structure which, under the microscope, shows countless minute highly reflective spherical surfaces offering the utmost resistance to the passage of heat and sound waves. Subsequent refining and sizing operations produced finished Calicel which is the base for numerous insulators and is also used as an aggregate in the manufacture of Calicel Acoustical Tile and Calistone Insulating Concrete and Roof Slabs.

Merits

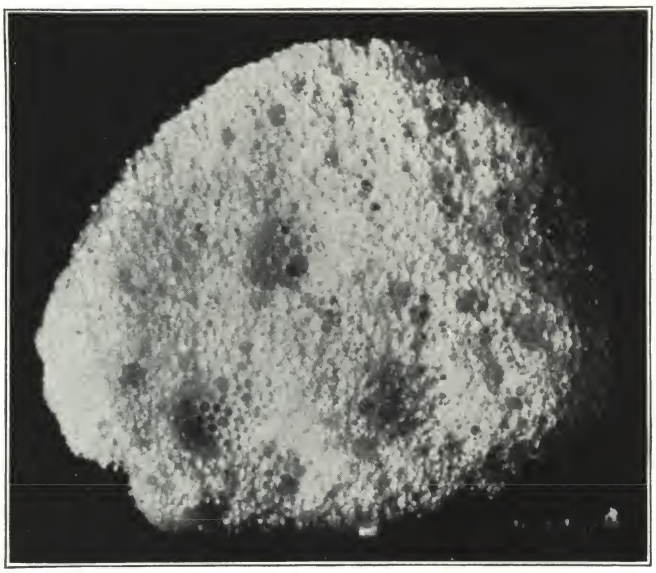
Calicel is naturally and permanently fire, vermin and moisture proof, and should not be confused with other loose fibrous or granular insulators since its value is derived from the never changing cellularity of its particles rather than from cells created between the particles. Though extremely light in weight, it possesses good strength of body and will support a column of its own particles 100 feet or more high without crumbling.

Tests by the Armour Institute of Technology show the thermal insulating value of Calicel-H to be .28 or better per inch thickness. It is much used for sound deadening or absorption where these qualities alone are required.

Water will not injure it, as it has no affinity for moisture—nor for odors. Adjacent outside water leaks can be located immediately as it has no "blotter like tendency." Its hard quartz-like structure is a menace to rodents or vermin. Calicel contains no chemical properties which might prove detrimental to any other material (such as iron) which it might contact.

Calicel-H is one of the lightest fireproof insulations known; its weight, when placed in walls or ceilings being ten pounds or less per cubic foot.

When sound deadening of floors, walls and ceilings is desired, loose Calicel-H gives most remarkable results; a recent installation of 4-in. walls giving an intensity reduction of 75 decibels. Recent installations include major broadcasting studios.



A Single Grain of Calicel Magnified 20 Diameters

The unretouched photo shows the minute air cell construction that accounts for the superior insulating and sound deadening qualities of Calicel

Installation

It is remarkably dust-free and easy to install—no special equipment being required. It is furnished in convenient sized bags and is poured into place, dry, like so much sand or grain—always seeking all voids without "arching" and without discomfort to installation crews.

Finally, in spite of its quality, it can be purchased at as low a price per unit of value as any insulation now known.

Distribution and Service

Calicel-H is distributed through approved dealers or contractors in all principal cities who are prepared to make or supervise installations.

A complete engineering service for heat, cold and sound insulation is available to architects and engineers at all times.

Specification

Calicel-H as manufactured by Keasbey & Mattison Company, Ambler, Pa., shall be placed in the following locations (or as indicated by plans); the installation shall be made as per the instructions of the manufacturer, by or under the supervision of his distributor or approved contractor. Care must be taken to secure absolute filling of all voids in walls, ceilings, floors, etc., which are to be treated.

SILVERCOTE PRODUCTS, INC.

161 East Erie Street, CHICAGO, ILL.

Mills: Kalamazoo, Michigan

For Milcor Silvercote Insulating Plaster Base, See Milcor Steel Co.'s Catalog

PRINCIPLE OF REFLECTIVE INSULATION

LAWS OF HEAT TRAVEL—The following statements may be made as facts, susceptible of proof, accepted as established laws of heat travel.

LAW NO. 1—HEAT TRAVELS IN THREE WAYS—

1. By Conduction—The passage of heat through solid materials molecule to molecule, by contact. The denser the material the faster the heat travel. Hence heat travels more readily through metals than wood and more readily through wood than fibrous material or cloth. (Illustrations—the passage of heat to the handle of a poker, one end of which is in fire. The melting of snow on a cement walk where a heated portion of an adjoining building is under the walk, when the outside temperature is below freezing.)

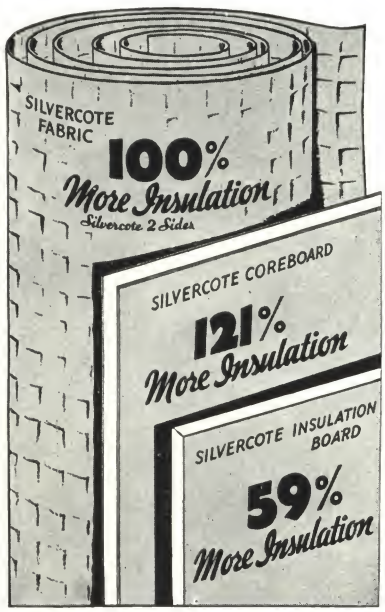
2. By Convection—The conducting of heat through atmosphere by air currents. (Illustration—The rising of heated air from a radiator or heater, its passage to the top of a room or enclosure, its passage downward on cooler sides of such room or enclosure, particularly in front of windows in cold weather.) Heat travels by convection in all air spaces but the smaller and more confined the air space, the less convection occurs.

3. By Radiation—The direct passage of heat energy through space (atmosphere or vacuum), from object to object, without molecular contact (conduction) or atmospheric movement (convection). (Illustrations—The sun's heat rays (infra red rays) passing through space for 90 million miles and becoming heat upon contact with atmosphere and earthly objects. The passage of heat from the filament of an electric light bulb across the vacuum in the bulb, becoming heat upon contact with the glass enclosure.)

LAW NO. 2—Through a vacuum heat is transferred 100% by radiation and through such air spaces as usually occur in building construction, the heat transfer by radiation is estimated at 50% or more. Silvercote products deal essentially with radiant heat.

LAW NO. 3—A brilliant, mirror-like surface reflects heat rays in exactly the same manner as it reflects light rays. Heat rays (infra red rays), however, unlike light rays, penetrate optical darkness and are reflected with equal effect in sealed dark spaces not visible to the eye. Such surfaces reflect, rebound, or turn back from 80% to 95% of the radiant heat that strikes them, according to the brilliancy and homogeneity of the surface, entirely preventing such percentage of heat from entering the material in the slightest degree.

LAW NO. 4—EMISSIVITY—A highly polished, reflecting surface emits or throws off heat much more slowly than a dull, dark surface. All colors, tones, and hues have rated values in the emission of heat. Dead black, which absorbs and emits more heat than any other shade, is taken as a standard and rated 100%. Under this classification, a brilliant silver surface is rated at 9%. Hence the small percentage of heat that is admitted to a material having a polished silver surface is discharged very slowly from the opposite side when that side is also surfaced with a like silver surface. (Illustrations—A black kettle discharges vastly more heat than one surfaced outside with a burnished surface of silver or copper. Radiators, and all heating units, are in their most effective color for the discharge of heat when black.)



LAW NO. 5—Prior to the full development of the reflective insulation, all commercial thermal insulation was based upon the slow conduction of heat, the principle being to build a structure, filled with minute air cells, too small for convection, that would interfere with the transfer of heat from molecule to molecule and thus slow up its passage from one side of the material to the other.

The principle of reflective insulation is to reflect or rebound heat at the surface of the material and permit as little as possible to enter.

For the above reason, the thickness of a reflective material does not matter (as is the case with other types of insulation), so long as it possesses sufficient strength to be practical in the usual forms of construction.

SILVERCOTE SURFACES

The surfaces of all Silvercote products consist of a non-metallic, homogeneous pigment, polished into a brilliant silver sheen which reflects radiant heat to a marked degree, as will be observed by the insulating values recited hereafter in these specifications and drawings. Essential properties follow:

1. The surfaces are not metal and are consequently free from oxidation to which all metal surfaces (except gold and platinum) are subject.
2. The surfaces are waterproof and washable.
3. The surfaces are highly moisture resistant, equal in this respect to lead sheets.
4. The surfaces are not affected by acids or gases encountered in the customary uses of thermal insulation, whether in building construction, refrigeration, or the cold storage fields.
5. The surfaces are entirely homogeneous and impervious to air infiltration wherever used.
6. The surfaces are non-conductors of electric and thermal energy and are designed to establish a difference in surface temperatures on transverse surfaces in the direction of heat flow.
7. The surfaces have radio-active properties.

SILVERCOTE INSULATION FABRIC

DESCRIPTION—Silvercote Insulation Fabric is manufactured from two external sheets coated with a mineral pigment and polished to a highly reflective surface possessing the essential characteristics heretofore described for all Silvercote surfaces. The sheets are laminated with specially prepared asphaltum and reinforced with an interlining of fabric, imbedded in the lamination, consisting of a half-inch mesh of strong jute cords. Two silver like surfaces are exposed. The material thus fabricated is strong and flexible and applicable to all forms of construction. It can be creased, folded, and tucked into the most inaccessible places without injury. It requires no specialist for its installation but can be successfully handled by the most inexperienced. Silvercote Insulation Fabric weighs 75 lbs. per thousand square feet.

SIZES—Silvercote Insulation Fabric is made in convenient sizes and lengths. It is bundled in rolls of 250 and 500 square feet in the following widths:

36 in. for spanning two framing spaces (three framing members, studs, joists, or rafters set 16 in. on centers where sheathing, flooring, or interior finish is attached to the members at the same points of contact). The 4 in. slack in the material permits it to be bowed in toward the center of the wall creating an air space on each side.

32 in. for spanning taut two framing spaces (three framing members, studs, joists, rafters, or furring set 16 in. on centers).

18 in. for installation between studs, joists, or rafters set 16 in. on centers, where successive layers through wall sections are required.

THERMAL VALUE—Silvercote Insulation Fabric has been tested by a number of University and Industrial Laboratories with approximately the same results. For the purposes of these specifications, however, the tests run by Dr. J. C. Peebles of Armour Institute of Technology will be used as a basis for figuring the wall values of the various sections illustrated by the drawings contained herein. Tests of Silvercote Fabric dividing an air space conducted by the Armour Institute of Technology give it a rating of .33 B.t.u.'s per hour, per square foot, per degree of temperature F. per commercial thickness of 1/32 of an inch. The tests were run at a mean temperature of 70° F.

APPLICATION TO FRAMING—Silvercote Insulation Fabric, 36 in. Material, is designed to bridge two framing spaces (three framing members, studs, joists, or rafters set 16 in. on centers, where sheathing, flooring, or interior finish is attached to the members at the same point of contact). Application is as follows:

Nail the two outside edges, press material in, and nail through center to the intermediate framing member; then press in between members and crease at edge of each member with thumb and finger to create as uniform an air space between the material and the overlying finish as possible. Use 1 in. nails with ⅜ in. heads for the application.

In installing Silvercote Fabric, one important consideration should at all times be borne in mind. The reflective principle does not depend upon the solidity of a wall section but rather upon alternating air spaces with layers of material. The depth of these spaces is not particularly important. However, where possible, it is recommended that air spaces between the layers of material and between the material and adjoining structural members be held to not less than ⅜ in.

Silvercote Insulation Fabric, 32 in. Material, is designed to stretch taut across two framing spaces (three framing members, studs, joists, rafters, or furring set 16 in. on centers). In this application, use 1 in. nails with ⅜ in. heads spaced 3 in. apart on intermediate framing. In cases of shallow furring, a shorter nail may be used, especially where the nailing line is to be covered with another succeeding furring strip for additional layers.

Silvercote Insulation Fabric, 18 in. Material, is designed for application between framing set 16 in. on centers. As this material is put in place with ½x1 in. cleats, any nail suitable for fastening the cleats is acceptable.

The method of installation as illustrated in drawings on page 3 is prescribed to create uniform air spacing between the sheathing or exterior finish and the first layer of Fabric and between the successive layers of Fabric.

Care should be exercised, in nailing with cleats, to drive the cleats tight against adjoining framing so that no air infiltration will occur at this point.

Silvercote Fabric is tough and flexible and adaptable to all sorts of conditions. Every installation should be carefully watched to see that the Fabric is folded and tucked into all odd angles and corners, around all window and door frames, piping, etc., making a complete seal against air infiltration.

INTERIOR FINISH—Considerable demand has arisen for Silvercote Insulation Fabric as an interior finish applied to plaster and other wall surfaces in place of wall paper, furnishing decoration and insulation in one operation.

In this operation the walls should be prepared as for the application of heavy wall paper. In all cases the walls should be cleaned and sized with glue size. If an oil painted wall, add Venice Turpentine or molasses to the size to increase the tack.

Either of the three widths of Fabric may be used—36 in., 32 in., or 18 in. Use good quality of wallpaper paste stepped up with 2½ pounds of Venice Turpentine, molasses or Adhesium to 5 gallons of paste. Apply paste, fold and lay aside for about 3 hours. At the end of this time, apply second coat of paste, fold and trim ½ in. off each side for butting. Hang in the usual manner, rolling down surface with wide roller and joints with smaller roller.

For over decoration in the form of stencils or handwork, any paint may be used except water colors.

SILVERCOTE INSULATION COREBOARD

DESCRIPTION—Silvercote Coreboard is manufactured by laminating to both sides of a rigid core $\frac{3}{32}$ in. thick, 16 point liners coated on the exposed sides and polished to highly reflective surfaces. The silver coating possesses the essential characteristics heretofore described for all Silvercote surfaces.

The finished board is ⅜ in. thick with two silver like surfaces exposed. Silvercote Coreboard weighs approximately 1000 lbs. per thousand square feet.

SIZES—Silvercote Coreboard is made $\frac{3}{16}$ in. short of 4 ft. wide to allow a slight space between boards at the point of nailing. It is cut 6, 7, 8, 8½, 9, 10, and 12 feet long.

THERMAL VALUE—Tests run by Dr. J. C. Peebles, Armour Institute of Technology, give Silvercote Coreboard a thermal insulation of .265 B.t.u.'s per hour, per square foot, per degree of temperature F. per commercial thickness of ⅜ in. The tests were run at a mean temperature of 70° F.

STRUCTURAL STRENGTH—Due to its form of construction, Silvercote Coreboard possesses unusual tensile strength and, when used as sheathing, possesses more bracing strength than wood sheathing.

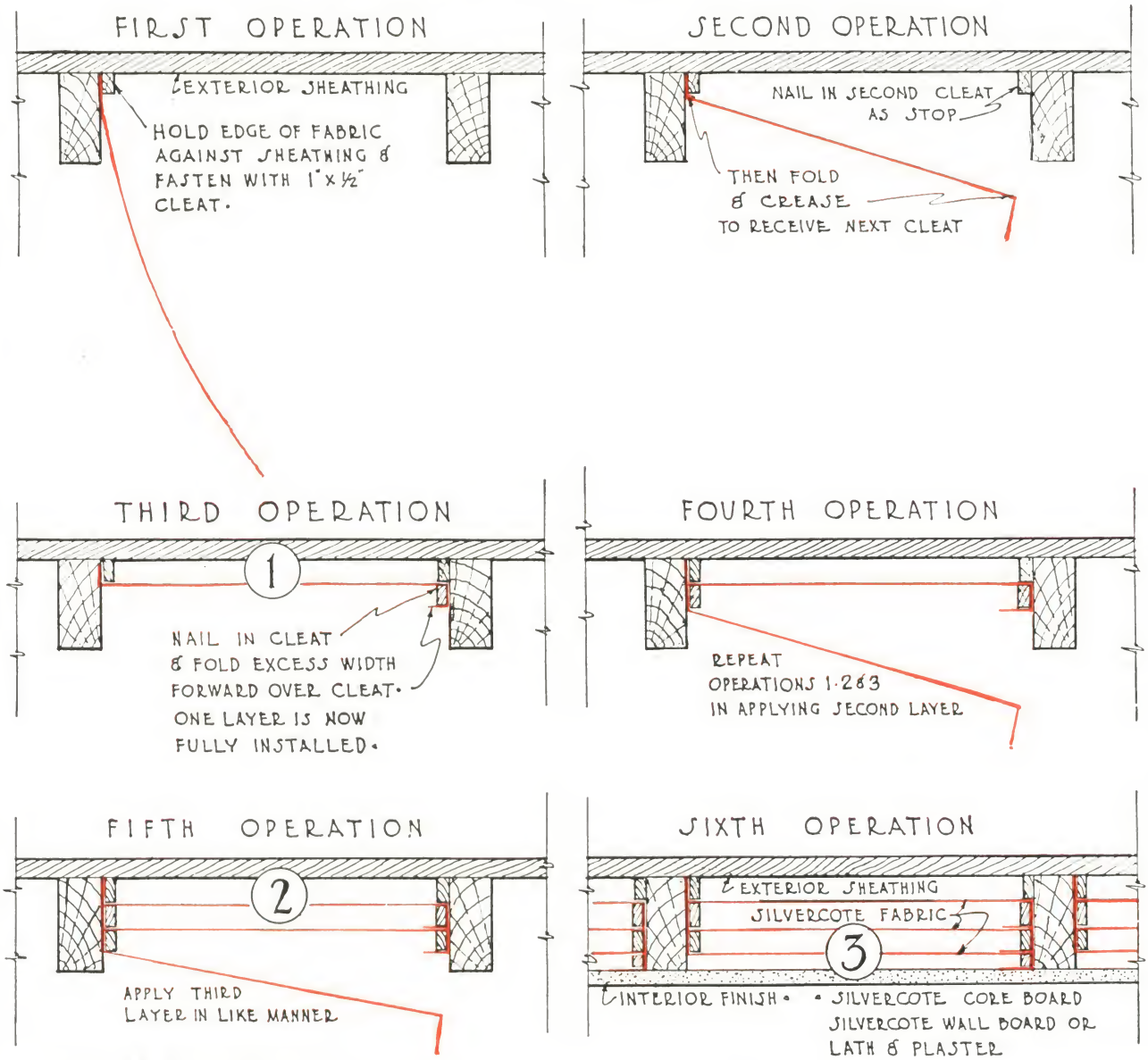
AS SHEATHING—Silvercote Coreboard is used as sheathing under wood siding, shingles, stucco, brick veneer, or stone veneer. It is made to span three framing spaces (four framing members, studs, joists, or rafters set 16 in. on centers). The boards are applied lengthwise of the framing members, and directly thereto, with ample bearing for nailing along all edges. A $\frac{3}{16}$ in. space is left between the edges of adjoining boards. Care should be exercised to see that Coreboard fits snugly around all windows and door frames to prevent air infiltration.

For nailing use 1¼ in. galvanized roofing nails with ⅜ in. heads, spacing the nails 3 in. apart along all edges and 6 in. apart along intermediate framing members.

To secure the maximum benefit from the reflective surface exposed on the outside, Silvercote Coreboard should be furred

INSTALLATION METHOD

for APPLYING • ONE • TWO & THREE LAYERS BETWEEN
FRAMING • • STUDS • RAFTERS • JOISTS
18" SILVERCOTE INSULATION FABRIC



COMPLETED WALL SECTION • THREE LAYERS OF FABRIC

KEY & DEFINITIONS •

B·T·U• OVER ALL COEFFICIENT OF HEAT TRANSMISSION IN B·T·U· PER HOUR PER SQUARE FOOT OF COMPLETE WALL SECTIONS INSULATED AS SHOWN ON DRAWINGS PER DEGREE F• DIFFERENCE BETWEEN OUTSIDE AND INSIDE AIR TEMPERATURE AT A MEAN TEMPERATURE OF 70° F •

B·T·U· UN·IN = B·T·U· OF THIS SECTION UNINSULATED.

B·T·U· INS· = B·T·U· OF THIS SECTION INSULATED AS SHOWN OR DESCRIBED.

% STOPPED • PERCENT OF HEAT TRANSFER STOPPED BY THE SILVERCOTE INSULATION IN THE SECTIONS ILLUSTRATED & DESCRIBED HEREIN •

ALL WALLS ON THIS PAGE ARE FIGURED AS STANDARD FRAME WALLS AS FOLLOWS: WOOD SIDING • WOOD SHEATHING • STUDDING• METAL LATH & PLASTER•

	B·T·U· UN·IN	B·T·U· INS	%STOPPED
WALL 1 •	.26	.15	42%
WALL 2 •	.26	.11	58%
WALL 3 •	.26	.09	66%

with 1x2 in. furring strips, over the material in line with the framing members before the application of any type exterior finish. This affords the benefit of the exterior reflective silver like surface and creates one additional air space.

AS INTERIOR FINISH—Silvercote Coreboard is applied to framing as interior finish in the following manner:

The 4 ft. board spans three framing spaces (four framing members set 16 in. on centers). If it is desirable to throw the room enclosure into uniform panel spacing, insert additional studs or furring to receive the edges of the board for nailing. Fit and cut the boards to the required spacing and prepare for nailing, then cover the face of intermediate studs or framing members with Hedsel Cement or Emulsified Asphalt Adhesive. Put the boards in place, pressing them firmly against the adhesive covered framing, and hold in place with shoring or bracing then nail at outside edges and across top and bottom with 1¼ in. galvanized roofing nails with ⅜ in. heads spaced 3 in. apart. Cover joints with wood or metal batten moldings as taste or specifications require. This leaves the panel surface entirely free from nails. Bracing should remain until adhesive is set.

Note: Emulsified Asphalt may be obtained in most localities and Hedsel Cement in many. In case either is unobtainable, communicate with this company for information regarding source of supply.

METAL JOINT MOLDINGS—Where metal joint moldings are used, the following procedure is observed:

Firmly nail metal joint moldings to the center of studs or framing faces on two adjoining sides of the panel to be set. Then cover the face of the intermediate studs or framing with Hedsel Cement or Emulsified Asphalt Adhesive. Place joint moldings over the two remaining sides of panel, and slide panel into the joint moldings already set in place.

Press firmly against intermediate studs covered with adhesive and hold in place with shoring or bracing until adhesive is set. Then firmly nail the exposed flanges of the two remaining joint moldings not previously fastened.

Continue this procedure to the setting of the final panel where the process will be interrupted by the fact that both side moldings will be securely fastened in place. In this case, omit the setting of the top or bottom molding and cover intermediate framing with adhesive including the top and bottom framing.

Slide the top and bottom moldings on the board and spring the board into the slots of the moldings already fastened. The unnailed moldings and board will then be firmly held in place by adhesive.

Note: The company can furnish wood filled metal moldings for base, wainscot and cap for additional trim if desired. These moldings are usually fastened with screws of the same metal finish as the moldings.

SILVERCOTE INSULATION BOARD

DESCRIPTION—Silvercote Insulation Board is manufactured in a manner similar to wood fibre wallboard, to which is applied a top liner coated with pigment and polished to a highly reflective surface. This surface possesses the essential characteristics heretofore described for all Silvercote surfaces. The reverse side has a manila liner, dead level, beater sized and tacky, a perfect surface for painting. The finished board is $\frac{3}{16}$ in. thick and weighs approximately 550 lbs. per thousand square feet.

SIZES—Silvercote Insulation Board is made $\frac{3}{16}$ in. short of 4 ft. wide, to allow for a slight space between boards at the point of nailing. It is cut 6, 7, 8, 8½, 9, 10, and 12 feet long.

THERMAL VALUE—Tests run by Dr. J. C. Peebles, Armour Institute of Technology, give Silvercote Insulation Board a thermal value of .49 B.t.u.'s per hour, per square foot, per degree of temperature F., per commercial thickness of $\frac{3}{16}$ of an inch. The tests were run at a mean temperature of 70° F.

AS INTERIOR FINISH—Silvercote Insulation Board is especially designed as an interior finish for use over old walls of plaster or other materials, or for direct application to framing. It finds a particular use in the making of backgrounds for window displays, exhibits, and other temporary structures when decorative effects are sought. The fact that it is a two sided board, one side silver surfaced, waterproof and washable, the other especially prepared for painting, adds greatly to its usefulness. Wherever installed it provides decoration and insulation in one installation.

APPLIED TO FRAMING—For permanent installation to framing as interior finish, Silvercote Insulation Board is applied in the following manner:

The 4 ft. board spans three framing spaces (four framing members set 16 in. on centers). If it is desirable to throw the room enclosure into uniform panel spacing, insert additional studs or furring to receive the edges of the board for nailing. Fit and cut the boards to the required spacing and prepare for nailing, then cover the faces of the intermediate studs or framing members with Hedsel Cement or Emulsified Asphalt Adhesive. Put the boards in place, pressing them firmly against the adhesive covered framing, and hold in place with shoring or bracing; should remain until adhesive is set. Then nail at the outside edges and across top and bottom with 1 in. nails with ¼ in. heads spaced 3 in. apart. Cover joints with wood or metal batten moldings as taste or specifications require. This leaves the panel surfaces free from nails.

METAL JOINT MOLDINGS—Where metal joint moldings are used, the following procedure is observed. Firmly nail metal joint moldings to the center of studs or other framing faces on two adjoining sides of the panel to be set. Then cover the faces of intermediate studs or framing with Hedsel Cement or Emulsified Asphalt Adhesive. Place joint moldings over the two remaining sides of panel, and slide the panel into the joint moldings already set in place. Press firmly against intermediate studs covered with adhesive and hold in place with shoring or bracing until adhesive is set. Then firmly nail the exposed flanges of the two remaining joint moldings not previously fastened. Continue this procedure to the setting of the final panel where the process will be interrupted by the fact that both side moldings will be securely fastened in place. In this case omit the setting of the top or bottom molding and cover intermediate framing with adhesive including the top and bottom framing. Slide the top and bottom moldings on to the panel and spring the board into the slots of the moldings already fastened. The unnailed moldings will then be firmly held in place by adhesive.

Note: The company can furnish wood filled metal moldings for base, wainscot and cap, for additional trim, if desired. These moldings are usually fastened with screws of the same metal finish as the moldings.

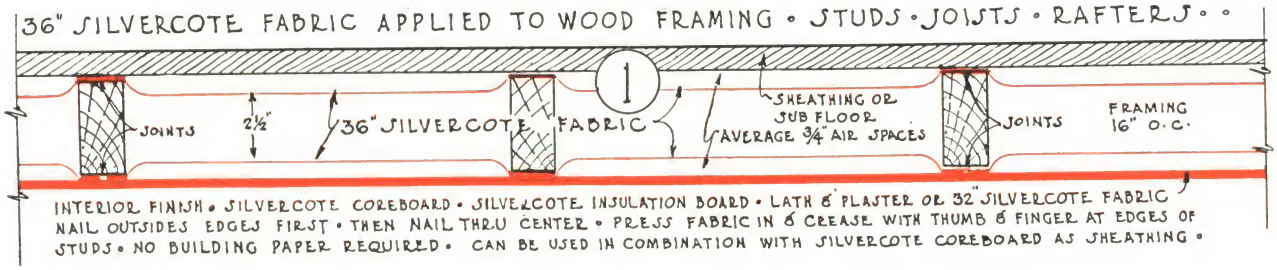
WITH METAL LATH AND PLASTER—Where Silvercote Insulation Board is used for insulation only and is to be covered with metal lath and plaster, as in some cold storage work, turn the silver like surface toward the inside of the wall and nail firmly at all framing bearings. Then coat the room side (back side of board) with Emulsified Asphalt and apply metal lath and plaster over this surface in the usual manner without furring, pressing the plaster through the meshes of the lath firmly against the asphalt-covered board.

Note: This method of installation may be used in any case where Silvercote Insulation Board is shown on drawings as an interior finish, if a plaster interior is desired.

MISCELLANEOUS SECTIONS

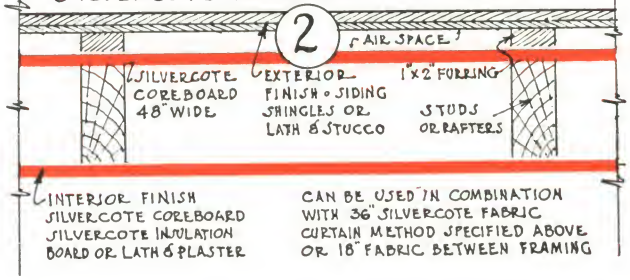
CURTAIN METHOD OF APPLYING SILVERCOTE INSULATION FABRIC • SILVERCOTE COREBOARD AS SHEATHING • COTTAGE SECTIONS • BRICK VENEER & ATTIC SECTIONS • •

36" SILVERCOTE FABRIC APPLIED TO WOOD FRAMING • STUDS • JOISTS • RAFTERS • •

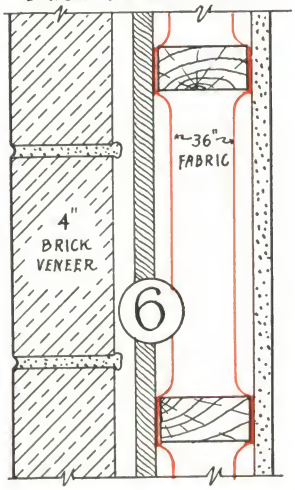


INTERIOR FINISH • SILVERCOTE COREBOARD • SILVERCOTE INSULATION BOARD • LATH & PLASTER OR 32" SILVERCOTE FABRIC NAIL OUTSIDES EDGES FIRST • THEN NAIL THRU CENTER • PRESS FABRIC IN & CREASE WITH THUMB & FINGER AT EDGES OF STUDS • NO BUILDING PAPER REQUIRED • CAN BE USED IN COMBINATION WITH SILVERCOTE COREBOARD AS SHEATHING •

SILVERCOTE COREBOARD AS SHEATHING

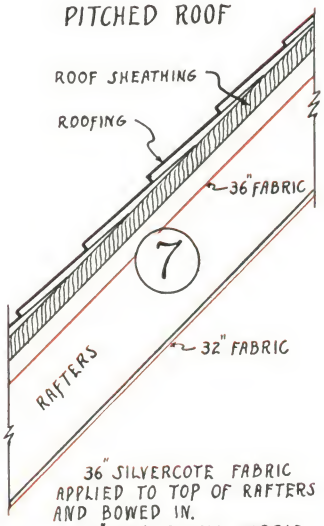


BRICK VENEER WALL



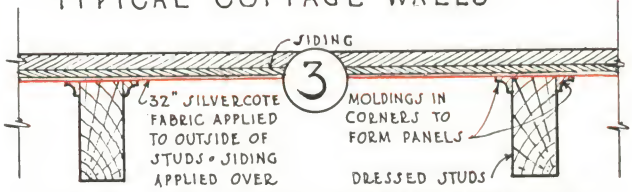
BRICK VENEER, SHEATHING, METAL LATH & PLASTER.

PITCHED ROOF

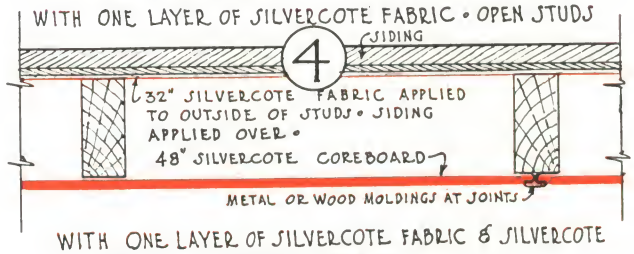


36" SILVERCOTE FABRIC APPLIED TO TOP OF RAFTERS AND BOWED IN.
32" SILVERCOTE FABRIC NAILED TO BOTTOM OF OPEN RAFTERS.

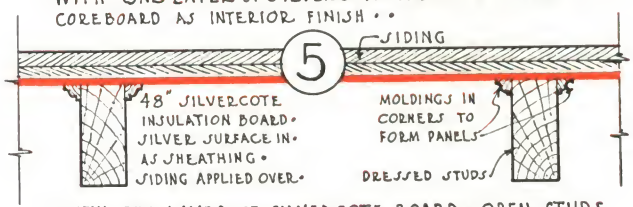
TYPICAL COTTAGE WALLS



WITH ONE LAYER OF SILVERCOTE FABRIC • OPEN STUDS

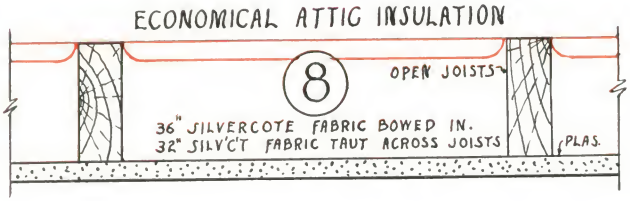


WITH ONE LAYER OF SILVERCOTE FABRIC & SILVERCOTE COREBOARD AS INTERIOR FINISH • •



WITH ONE LAYER OF SILVERCOTE BOARD • OPEN STUDS

ECONOMICAL ATTIC INSULATION

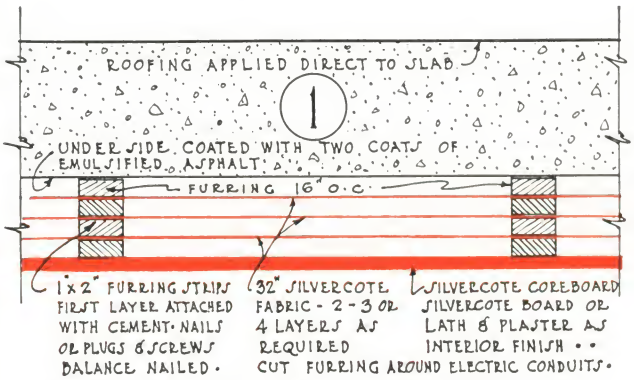


		B.T.U. UN-IN	B.T.U. INS.	% STOPPED
WALL 1 • FIGURED AS STANDARD FRAME WALL WITH WOOD SHEATHING & WOOD SIDING OUTSIDE	A • ONE LAYER FABRIC METAL LATH & PLASTER	.26	.15	42%
	B • TWO LAYERS FABRIC METAL LATH & PLASTER	.26	.11	58%
	C • ONE LAYER FABRIC COREBOARD INSIDE	.26	.10	62%
	D • TWO LAYERS FABRIC COREBOARD INSIDE	.26	.09	65%

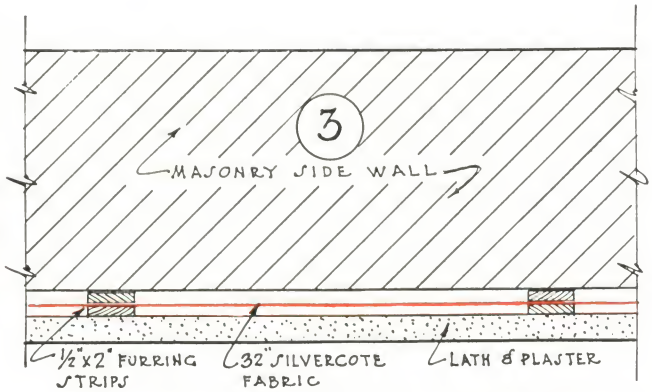
		B.T.U. UN-IN	B.T.U. INS.	% STOPPED
WALL 2 •	A • METAL LATH & PLASTER INSIDE	.26	.15	42%
	B. WITH COREBOARD INSIDE	.26	.10	62%
WALL 3		1.28	.46	.64%
WALL 4.		1.28	.16	86%
WALL 5.		1.28	.35	72%
WALL 6	A. 1 LAYER FAB.	.22	.15	32%
	B. 2 LAYERS FAB.	.22	.11	50%
ROOF 7	A. 1 LAYER FAB.	.56	.20	64%
	B. 2 LAYERS FAB.	.56	.14	75%
FLOOR 8	A. 1 LAYER FAB	.69	.22	68%
	B. 2 LAYERS FAB	.69	.15	78%

MASONRY ROOF SLABS & WALLS

SHOWING SILVERCOTE PRODUCTS AS INSIDE INSULATION

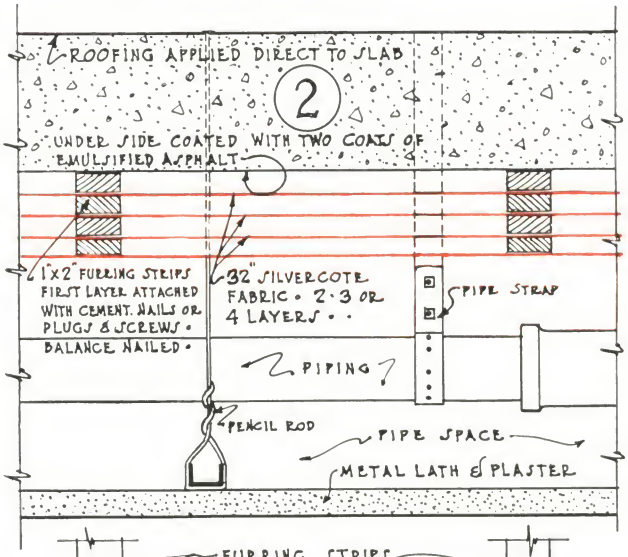


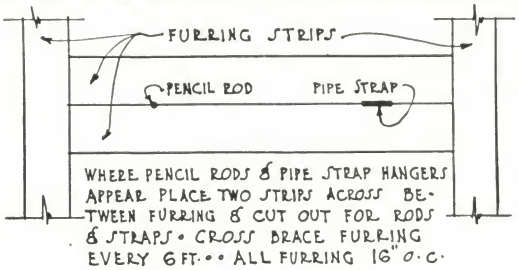
FLAT CEILING FREE FROM PIPING OR OTHER OBSTRUCTION.



INSULATING THE INSIDE OF MASONRY WALLS

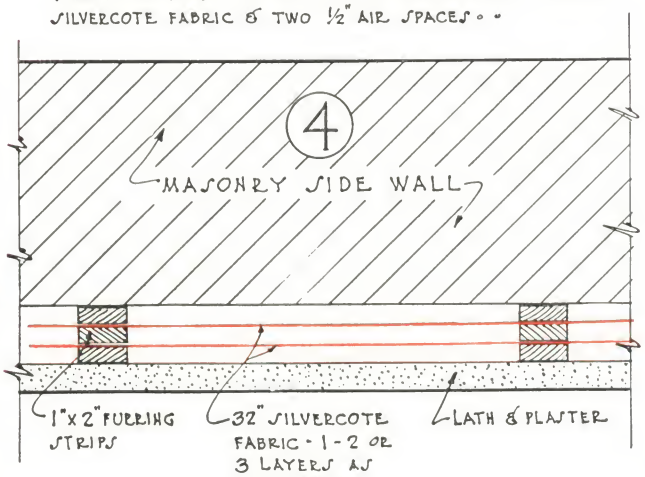
SILVERCOTE FABRIC & TWO ½" AIR SPACES..





SUSPENDED CEILING WHERE PIPE SPACE IS PROVIDED ABOVE.

IN CASE UNDER SIDE OF ROOF SLAB IS NOT FLAT BRIDGE FURRING ACROSS AT RIGHT ANGLES TO CONCRETE BEAMS WITH CROSS BRACING ON SURFACE OF BEAMS..



INSULATING THE INSIDE OF MASONRY WALLS

SILVERCOTE FABRIC & 1" AIR SPACES

	B.T.U. UN-IN	B.T.U IN.	% STOPPED
ROOF SLAB 1.			
A. AS DRAWN WITH SILVERCOTE COREBOARD INSIDE	.39	.08	80%
B. WITH METAL LATH & PLASTER	.33	.10	70%
ROOF SLAB 2.	.33	.08	76%
WALL 3.	.32	.16	50%
WALL 4.	.32	.12	62%
ROOF SLAB 1.			
C. WITH ONE LAYER OF FABRIC & METAL LATH & PLASTER	.33	.16	50%
D. WITH TWO LAYERS OF FABRIC & METAL LATH & PLASTER	.33	.12	63%

UNITED STATES MINERAL WOOL COMPANY

Manufacturers of Home and Industrial Insulation Products

TELEPHONE
CAledonia 5-0588

Since 1881

280 Madison Avenue

NEW YORK, N. Y.

FACTORY: STANHOPE, N. J. (Railroad Station Netcong, N. J.)

WESTERN CONNECTION

COLUMBIA MINERAL WOOL COMPANY, CHICAGO, ILL.

FACTORY: SOUTH MILWAUKEE, WIS.

THE INSULATED HOME IS COOL IN SUMMER—WARM IN WINTER

Loose Mineral Wool

Mineral Wool is made by a process which converts the basic material, while in a molten condition, into a fibrous state. It is recommended for lining walls, floors, roofs and ceilings and for use wherever a continuous unbroken job of insulation is desired.

Advantages of Loose Mineral Wool

(1) Mineral Wool builds up a very high resistance to the passage of heat, cold and sound through the sidewalls, roof and attic floor.

(2) In winter, Mineral Wool prevents the escape of heat through walls and ceilings of the home. It reduces fuel expense at least one-third.

(3) In summer, Mineral Wool repels outside heat making the home many degrees cooler.

(4) Mineral Wool is widely used as a sound-deadener and will prevent, to a great degree, the transmission of sound from within or without the house. It is especially recommended for sound-proofing the dividing walls and floors in apartments.

(5) In sidewalls, Mineral Wool prevents circulation of cold drafts thus preventing heat loss through convection or circulation of air — board of blanket forms of insulation cannot prevent circulation of air in sidewalls.

(6) Mineral Wool is absolutely indestructible, vermin - proof, and fire-proof. It forms an effective fire barrier.

(7) Mineral Wool is reasonable in cost and can be economically and efficiently installed by unskilled labor.

Hand Packing Loose Mineral Wool in Sidewall

This method of installing Loose Mineral Wool assures a wall that is 100% full and permits inspection before the wall is lathed and plastered.

Hand Packing of Loose Mineral Wool

(*New Construction*)

For best results, Loose Mineral Wool should be hand packed in the sidewalls to full stud thickness before the lather comes on the job. It will remain in place between the studs without settling.

The great advantage of the hand packing method of applying rock wool insulation is that a firmly packed wall —100% full—is assured. Furthermore, it permits inspection *before* the wall is lathed and plastered.

For attic floor insulation (either new or old homes) a 3-inch layer of Loose Mineral Wool should be placed upon the laths of the top floor ceiling.

Covering Capacity

The covering capacity of Loose Mineral Wool is approximately 10 lbs. per cubic foot.

Granulated Mineral Wool

Granulated Mineral Wool is made in pellet form and is recommended for use wherever peculiar construction necessitates the use of an insulating material that pours readily into place.

The covering capacity of Granulated Mineral Wool is about the same as that of Loose Mineral Wool . . . approximately 10 lbs. per cubic foot.

Quilts

Mineral Wool Quilts are recommended where construction permits only a 1-inch or 2-inch thickness of insulation. The Quilts are made of a layer of mineral wool between sheets of heavy Kraft paper, stitched at intervals to keep the wool in place.

Furnished in rolls of standard widths.

OTHER INSULATING PRODUCTS

We manufacture an efficient high temperature cement of which slag wool is the chief ingredient. Recommended for all types of industrial equipment, boilers, pipes and similar purposes where a plastic insulation can be used and a continuous unbroken layer of insulation is desired. Further information on request.

We also furnish Rock Wool Blankets, with or without wire, for all high and low temperature requirements.

REYNOLDS CORPORATION

EXECUTIVE OFFICES
19 Rector Street
NEW YORK, N. Y.

WESTERN SALES OFFICE
400 Wrigley Building
CHICAGO, ILL.

PACIFIC COAST SALES OFFICE
345 Ninth Street
SAN FRANCISCO, CAL.

Products

METALLATION* (Genuine Aluminum Insulation); ECOD FABRIC* (Base for Plaster, Stucco and Brick Veneer); LIQUID METALLATION; and METALLIZED WALL COVERINGS.

Metallation

What is Metallation?—"Metallation" is bright, polished, genuine sheet aluminum, cemented to one or both sides of heavy, tough kraft paper. Properly installed, it serves as effective heat insulation for dwellings and buildings, reducing heat losses through walls and roof during winter and maintaining more comfortable conditions in hot weather.

Types of Metallation—*Type A*—Sheet aluminum cemented to *both* sides of heavy, tough kraft paper with 1¼-in. plain paper margins exposed. Type A is especially designed and scored for installation between studs, joists or rafters, with paper edges nailed inside framing members, to form a curtain of insulation between two dead-air spaces. Shipped in 18-lb. rolls, 176 ft. 5 in. long and 17 in. wide; containing 250 sq. ft.

Type B—Sheet aluminum, cemented to *both* sides of heavy, tough kraft paper. Type B is especially designed for application horizontally or vertically over studs, rafters or joists in a way that provides an air space on each side of the Metallation. Shipped in 16-lb. rolls, 93 ft. 9 in. long and 32 in. wide, or 120 ft. long and 25 in. wide; containing 250 sq. ft.

Type C—Sheet aluminum, cemented to *one* side of heavy, tough kraft paper. Type C is especially designed for use as building paper, under sheathing or roof boards, and in types of construction in which only one surface can face an air space. Shipped in 13-lb. rolls, 93 ft. 9 in. long and 32 in. wide, or 120 ft. long and 25 in. wide; containing 250 sq. ft.

How Metallation Insulates—The following quotation from U. S. Bureau of Standards Circular No. 376, "Thermal Insulation of Buildings" (page 3 et seq) will explain how Metallation functions: "Although air is a very poor conductor of heat, the insulating value of an ordinary air space is rather small, on account of the large transfer of heat by convection and radiation. Radiation is largely responsible for the ineffectiveness of air spaces bounded by ordinary building materials, such as are found in frame or other hollow walls. The low insulating value is often erroneously attributed to convection; but, as a matter of fact, from 50% to 80% of heat transfer across air spaces of ordinary sizes takes place by radiation. If the air spaces were bounded by bright metallic surfaces, transfer of heat by radiation would be greatly diminished, since clean metallic surfaces are much poorer radiators than non-metallic surfaces, such as brick, stone, glass, wood, plaster, paper, etc."

If one side of an ordinary air space, as found in building walls, is covered with Metallation, radiation across this space is reduced about 95%; the convection remains the same. The resistance to heat flow across the air space is more than doubled by this treatment and the resultant savings in heat flow through a typical frame wall averages from 20% to 35%.

Metallation, Type A or B, applied so as to subdivide an ordinary air space, gives the benefit of two such air spaces; so reducing convection and minimizing radiant losses. The resultant savings in heat flow through a typical frame wall averages from 40% to 60%.

Metallation Has Low Heat Storage Capacity—As opposed to ordinary types of low conductivity insulation, Metallation because of its light weight, has negligible heat storage capacity, resulting in particular advantages when used to insulate building walls, roofs or attics; in summer very little heat is stored in the insulation, to be released into the rooms after sundown; and in winter very little heat is absorbed from within the room. Buildings which are intermittently heated or cooled can be heated or cooled more quickly and economically.

Metallation is Permanent Insulation—Tests and actual experience have proven the durability of aluminum foil insulation when exposed to ordinary conditions, such as found in home insulation. The following quotation from Prof. Gordon B. Wilkes, Massachusetts Institute of Technology, is illustrative of the many authoritative, impartial opinions on this subject:

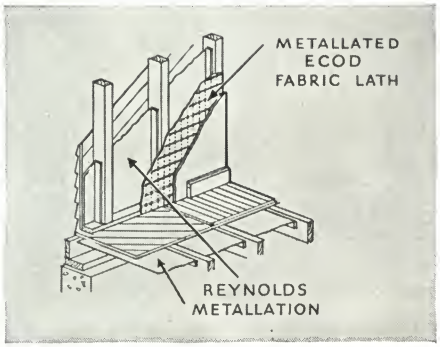
"Having been in charge of a large number of tests to determine the insulating value of aluminum foil, and having observed for more than six years, its behavior under many conditions far worse than one would ordinarily meet in the home, I am convinced that under ordinary conditions of use in house insulation, the surface of the aluminum may be considered permanent as far as insulating value is concerned."

Metallation is Waterproof—Metallation loses none of its efficiency through moisture absorption—a problem frequently encountered with other types of insulation. Metallation is waterproof, windproof, vermin-proof, and odorless.

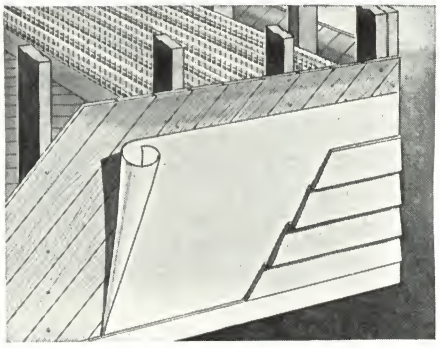
Metallation is Economical—While Metallation has been used on the most expensive and pretentious structures, it is so low in cost that every building owner can now afford insulation. Metallation makes possible substantial savings in heating or air-conditioning equipment and in fuel consumption.

Sold by Leading Lumber and Building Material Dealers—Metallation is sold by leading lumber and building supply dealers. Reynolds Sales Engineers will gladly help architects, engineers, builders or home owners solve insulation or construction problems.

In Attics—Types B or C should be so placed on the underside of all roof rafters that a bright reflective surface shall face the rafter space.



In Sidewalls—Type A or B should be applied between all studs in exterior walls, to form a curtain terminating at the sills, plates or headers.



As Weatherproofing Material—Type C or B should be stretched transversely over all sheathed surfaces with the metal face out. When used over sheathing, Metallation is primarily a weatherproofing material, as it acts as an efficient insulator only when it faces or divides an air space.

**Metallation, Metallated Ecod and Ecod are trade-marks of Reynolds Corporation, duly registered in the U. S. Pat. Off.*

REYNOLDS METALLATED ECOD* AND PLAIN ECOD FABRIC* (Welded Fabric)

Description—Reynolds Welded Fabric, the modern plaster, brick veneer and stucco base and reinforcement, is made in two types, Metallated and Plain. Both Reynolds Metallated Ecod and Reynolds Plain Ecod Fabric are available in galvanized and ungalvanized steel, to suit the need of the particular job.

It is composed of steel ribs spaced 4 ins. apart, electrically welded to cross wires of cold drawn steel. The cross wires are woven through wide corrugations of heavy kraft, waterproofed paper, metal-backed with highly polished, pure aluminum foil, in the case of Metallated Ecod. In the plain type, it has a backing of waterproof, duplex kraft paper.

Reynolds Ecod Fabric is also available in sheets slotted for tie-on work, either in standard sizes or in sheets 8 ft. 1½ ins. long, 31 ins. wide.

Reynolds Ecod Fabric is made in sheets measuring 48¾ ins. x 31 ins. and 50 sq. yds. (43 sheets) are packed in each carton; or if desired, in sheets 8 ft. 1½ ins. long, 31 ins. wide.

The shipping weights per carton of various kinds of Reynolds Ecod (Welded) Fabric are as follows:

Plain Galvanized.....105 lbs.	"Metallated" Galvanized.....106 lbs.
Plain Ungalvanized..... 98 lbs.	"Metallated" Ungalvanized... 99 lbs.

Reynolds Metallated Ecod Fabric—This type is used as a base and reinforcement for interior plaster or exterior stucco or reinforced brick veneer, where it is desired to secure the most efficient lath, plus the high insulation value of Reynolds Metallation, for the least expenditure of money. Highly polished sheet aluminum is mounted to the heavy, waterproof kraft paper with mastic. The "Metallized" surface is on the back so that when applied, it faces the air space between framing members or sheathing. Reynolds Metallated Ecod has the same insulation value as Type C Metallation.

Reynolds Plain Ecod Fabric—This type has the same metal reinforcing ribs and wires as Metallated Ecod, but has a fibrous backing of waterproof, duplex kraft paper instead of Metallation.

Exterior Application—Reynolds Ecod (Welded) Fabric should be applied on exterior sidewalls in such a way that each sheet laps over the sheet below it along the horizontal edge. It should be applied in staggered design so that vertical joints are broken. In exterior stucco work, the sheets are applied by starting at the bottom of the wall and working up, as with shingles and siding.

Reynolds Ecod Fabric should receive *at least a full ¾-in. coat of stucco* over the face of the lath, and stucco should be applied according to manufacturer's specifications.

Interior Application—Reynolds Ecod (Welded) Fabric used inside the house as a plaster base should be applied by starting the ceiling sheets first and bending the sheets at the corners to provide a 4 to 6-in. shoe or apron down the sidewall. Although this is accepted practice, it is equally good construction to put on the top row of wall sheets first, turning them 4 to 6 ins. on the ceiling and then proceeding with the ceiling application. Lath the sidewalls with each sheet butted or lapped ⅛ in. over the one below it. In all corners, the sheets should be bent at right angles to fit the adjoining walls.

General—Sheets of Reynolds Welded Fabric are designed to span three spaces, where studs or joists are spaced on 16-in. centers. The fabric should be applied with the steel rib exposed to receive the plaster or stucco. Vertical joints should be broken by applying the sheets in staggered fashion.

For Tie-on Work—When attaching Reynolds Ecod (Welded) Fabric to ceilings under steel joists, it should be tied with 18-gauge galvanized, annealed tie wire, making ties at each rib. Where solid web joists are used or joist spacing exceeds 16 ins. on center, Reynolds Ecod Fabric should be tied to pencil rods or channel runners, attached to the joists and spaced 16 ins. on center. When using Reynolds Ecod Fabric on ceilings suspended from flat slabs, arches or concrete joists, it should be attached to pencil rods or furring channels spaced 16 ins. on center with 18-gauge galvanized, annealed tie wire.

The method of suspending framework, size of hangers, furring channels or rods should conform to standard practice and specifications.

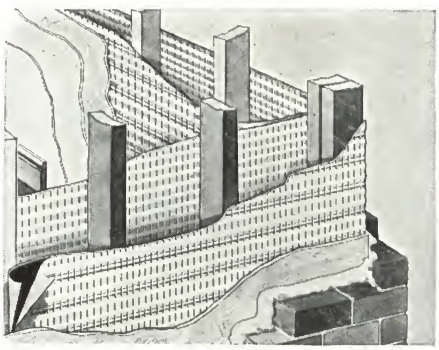
For Reinforced Brick Veneer—Reynolds Ecod Fabric eliminates sheathing in brick veneer construction. Apply Reynolds Ecod Fabric in accord with instructions for exterior application. As the brickwork goes up, it should be preceded by the application of a parge coat of brick mortar, to insure a monolithic reinforced bond. As the brick are laid, the void between brick and parge coat should be slushed full with mortar.

Nailing and Lapping—Use 4d common wire nails, driving nails straight through the steel rib wherever it crosses a stud or post. Do not turn the nail over or flatten the rib in nailing, but drive the nail so the head is flush with the top of the rib. *Do not drive the nail home!* For either exterior or interior work, the upper sheet should lap over the lower.

The horizontal laps of Reynolds Ecod Fabric should be either butted or lapped, not more than ⅛ in. for interior work and lapped at least ¼ in. for exterior work. Vertical laps should come over the stud lapping sheets not more than ¾ in., with ends of ribs placed over each other so one nail will pass through both ribs, forming continuous reinforcement.

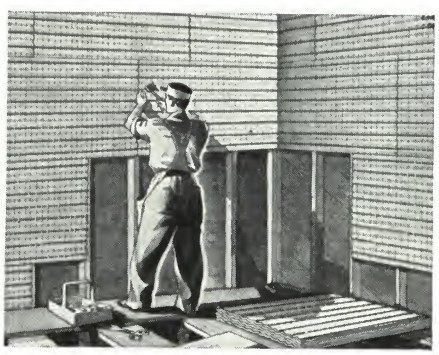
Bending and Cutting—Reynolds Ecod (Welded) Fabric is easily bent by pressing the sheet along the line where a bend is desired. Inside and outside bends are made in the same way. Reynolds Ecod Fabric may be cut with ordinary tinner's snips. Odd shapes and spaces should be measured accurately before cutting and the usual allowance made for laps.

Grounds and Plastering—Grounds for Ecod Fabric should be not less than ⅝ to ¾ in. thick for best work. The customary practices of good plastering will give ideal results. Patent plasters should be applied strictly in accordance with the manufacturer's instructions.



For Reinforced Brick Veneer—Reynolds Metallated Ecod eliminates ordinary sheathing in brick veneer construction—assures an insulated, strong, waterproof wall.

For Tie-On Work—Slotted Ecod, at no increase in price, is easily tied to ceilings under steel joists, solid web joists or flat slabs, arches and concrete joists.



As a Plaster Base—Reynolds Ecod Fabric is easily and quickly applied to form a strong and economical base for interior plaster—and also for exterior stucco.

* *Metallation, Metallated Ecod and Ecod are trade-marks of Reynolds Corporation, duly registered in the U. S. Pat. Off.*

THE STANDARD LIME AND STONE COMPANY

INSULATION DIVISION

Specialists in the Manufacture and Installation of Rock Wool Building Insulation

First National Bank Building, BALTIMORE, MARYLAND

THE COMPANY AND EXPERIENCE BEHIND THE PRODUCTS

THE STANDARD LIME AND STONE COMPANY, manufacturers of Capitol Wool Insulation, has been prominent in the building trades since 1888. In its eight plants the Company produces crushed stone, pulverized limestone, lime, hydrated and finishing lime, Capitol Portland Cement, Capitol Rock Wool Insulation, etc. The Company has built its reputation by using extreme care in the selection of basic materials, thus producing the finest products of their kinds obtainable.

The operating personnel of the Insulation Division of the Company, long identified with the Rock Wool insulating industry, has contributed many of its basic inventions, and by new, improved manufacturing processes is producing a larger, longer, lighter, and more flexible fibre, and, therefore, a more efficient form of Rock Wool.

CAPITOL ROCK WOOL—THE IDEAL BUILDING INSULATION

Building Insulation—What It Is

The very fact that heat travels so easily makes the question of heat insulation a complicated one. Generally speaking, the more dense (or heavier) a substance, the more readily it conducts heat. Consequently we find our best heat conductors among the metals and our non-conductors among the lighter things such as wood, wool, feathers, etc.

The perfect insulation is a vacuum. Heat simply can not cross a vacuum, but this form of insulation is not readily adaptable to building construction.

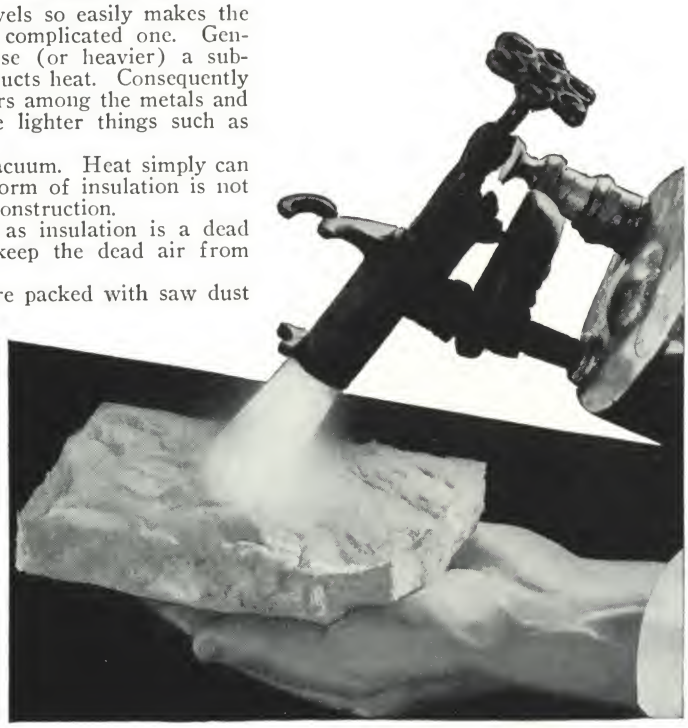
Next in value to a vacuum as insulation is a dead air space, particularly if we keep the dead air from circulating.

The walls of an ice house are packed with saw dust to keep the air from circulating, but the imprisoned air, not the saw dust, supplies the insulation.

Asbestos rock in solid form is not a good insulator, but when it is shredded into loose fibres, it holds enough air to retard heat passage: unfortunately these fibres are generally held together by some sort of cement cutting down the air content so that its value as an insulating material is greatly reduced. Its chief value lies in the fact that it is fireproof.

From the foregoing we will see that the ideal insulating material must be fireproof, light in weight, must contain a maximum of dead air cells, must be vermin-and-moisture-proof and at the same time lend itself to ease of installation.

Capitol Rock Wool meets these requirements in every particular.



The Blow Torch Test

The fireproof and heat-resisting qualities of Rock Wool are evident from the test illustrated above. Hold a pad of Rock Wool one inch thick in the palm of the hand. On top of the pad place a penny and concentrate upon the penny the flame of an automatic blow torch. Within a minute the penny will become red hot and yet no heat will be felt through the pad of Rock Wool.

What Capitol Rock Wool Is

Capitol Rock Wool is the nearest practical approach to perfect building insulation. It is processed into a spongy fibrous material and chiefly finished in two forms; in bats of a size to fit snugly between the studding of new construction and in granulated form known as Capitol Grade "A" Rock Wool Blowing fibre, for installation under pneumatic pressure in existing buildings. This form is also used for the insulating of attic floors in new work.

The manufacture of Rock Wool Insulation consists of taking a comparatively rare species of rock of special chemical structure, and melting it under the terrific heat of 3000°. While in this molten state it is blown from the furnace by high-pressure steam through crescent shaped openings into a receiving room where it cools into long silky threads in a loose tangled mass. These fibres are then re-arranged by a special fabricating process into bat or granulated form.

Capitol Rock Wool Bats—Bats are wall-thick (3⅝"), cut 15x23 inches to fit snugly by slight compression between 2x4-inch studs, spaced on 16 or 24-inch centers. They may be readily cut or pieced to fit irregular or odd size spaces.

Capitol Grade "A" Rock Wool Blowing Fibre—This insulation is also manufactured by the process described above. It is processed into granulated form, then carefully screened to remove all foreign particles and finally lifted by vacuum which picks up nothing but the pure fine fibres. It is then delivered to a bagging hopper where it is packed for delivery.

Advantages of Rock Wool Insulation

In summer the house insulated with Capitol Rock Wool is 8° to 15° cooler than before insulation.

In winter 20% to 40% is saved in fuel bills.

Temperature variation between rooms and floors is practically eliminated, doing away with the cause of drafts.

Rock Wool being 100% mineral, is permanent, will not decompose or corrode and is absolutely fireproof.

It will not settle with age or vibration.

The bats are easily cut to fit irregular or odd-shaped spaces.

It is adaptable to existing buildings as well as new construction.

WHY EVERY HOME SHOULD BE INSULATED WITH CAPITOL ROCK WOOL

Today it is a well-known fact that complete insulation of outside walls and ceilings, reduces the amount of radiation required by one-third. The saving in the cost of fuel which averages from 30% to 40% will usually return the cost of the insulation in four years.

From 77% to 81% of the heat transmitted through various types of walls and roofs may be prevented as the accompanying table shows. Usually the exterior wall and ceiling areas account for 50% of this loss, the balance being lost through windows, doors, etc. If we reduce the heat losses through walls and roof by 75% to 80% we automatically reduce the total heat loss from 35% to 40%. This means an equivalent fuel saving.

A properly insulated building not only requires one-third less heating equipment and consumes one-third less fuel but also is heated much more uniformly. This evenly balanced temperature eliminates drafts.

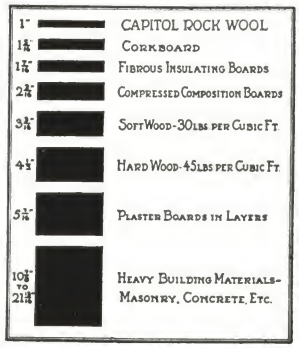
Rock Wool Renders the Home More Fireproof—One of the most serious hazards in building construction is the open air space between the 2x4-inch studs. These spaces have a flue action and permit the rapid spread of the fire to all parts of the house. Rock Wool effectively overcomes this hazard.

HEAT LOSSES THROUGH VARIOUS TYPES OF WALLS AND ROOFS

Type of Wall	Coefficients of Transmission Expressed in B.t.u.		Savings of Heat Losses with Insulation
	Uninsulated	Insulated 3⅝-in. Capitol Rock Wool	
1. Frame (wood siding and sheathing, wood lath and plaster)	.250	.055	78%
2. Frame Stucco (stucco, sheathing, wood lath and plaster)	.300	.056	81.3%
3. Brick Veneer Frame (4-in. brick, sheathing, wood lath and plaster)	.250	.056	77.6%
Type of Roof			
1. Wood Shingle Roof (wood lath and plaster ceiling)	.290	.058	80%
2. Asphalt Shingle Roof (or slate on wood sheathing)	.320	.062	80%

Comparative Efficiency of Capitol Rock Wool

This diagram is based on data compiled by the United States Bureau of Standards, indicates the relative thickness of various building materials required to equal the efficiency of Capitol Rock Wool. This remarkably low coefficient of heat transmission of Capitol Rock Wool is due to its countless exceedingly minute dead air cells.

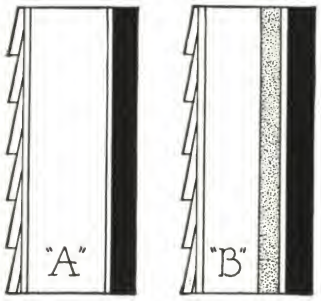


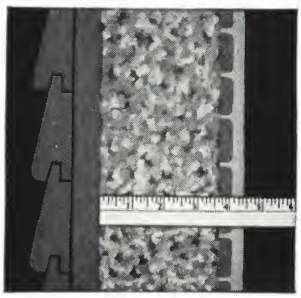
THE INSTALLATION OF ROCK WOOL NEW CONSTRUCTION

Buildings are insulated at the time of erection by the placing of Rock Wool batting between the studding. The roofs are insulated either with bats between the rafters or with the granulated fill known as Capitol Grade "A" Rock Wool Blowing Fibre, over the ceiling lath and plaster. The bats are made 15x23 inches to fit snugly with slight compression between 2x4-inch studding spaced 16 or 24 inches on centers. They are of a thickness slightly less than the studding to allow for the proper keying of the plaster. The weight of the finished bat is 5 pounds per cubic foot or 1¾ pounds per square foot of 4 inch thickness. When used on sloping areas the bats are held in place by strips of Compo-board. The bats are easily cut to fit irregular or odd-shaped spaces.

Handles Easily

Wall-thick Capitol Rock Wool can be easily applied by any workman. Cuts readily to odd-shaped space. Resilient, flexible, a permanent installation.





Which Method More Effective?

"A" pictures ordinary 3⅝-in. hollow studding space with absolutely no insulative value. "B" is ½ or 1-in. board type—inadequate insulation. Compare these with WALL-THICK Capitol Rock Wool Insulation completely filling 3⅝-in. studding space. No fire can rage between these walls! Heat or cold is repelled.

THE INSTALLATION OF ROCK WOOL EXISTING CONSTRUCTION

In walls of homes already built, Capitol Grade "A" Blowing Fibre is pneumatically conveyed through a hose into the wall air spaces. No work is done inside the house, the material being forced from either a Portable Electric Blower, placed at any convenient point, or from a Heavy-duty Mounted Blowing Unit. Shrubbery is properly protected. The average wall job takes only a day or two.

Whether the house is shingle, clapboard, brick, stucco, or half-timbered, the blowing method is always the same for finished walls. Trained workmen simply remove a few shingles, a piece of clapboard, or a few bricks for the insertion of the hose nozzle into the wall. Every crack and corner in the air spaces is packed solidly with Capitol Rock Wool Grade "A" Blowing Fibre. A roof or attic floor is insulated the same way. There is no litter inside or outside the house. The installed weight of this insulation is 6 pounds per cubic foot or 2 pounds per square foot of 4 in. thickness. The conductivity of Grade "A" Blowing fibre is .060 B.t.u. per sq. ft., 4 in. thickness, per degree Fahrenheit temperature difference.

Capitol Rock Wool Grade "A" Blowing Fibre Being Pneumatically Conveyed Through a Hose Into the Wall Air Spaces

To Insulate an Open Attic, Capitol Rock Wool Is Blown in a Thick Protective Blanket, Covering the Whole Ceiling Area

The Blowing Method Is Always the Same for Finished Walls. Note, Too, That the Entire Job Is Done Outside of the House

An Opening Is Made in Brick and Stucco Walls Straddling the Stud so that Two Panels Can Be Blown Through One Opening

Engineering Service for the Architect, Engineer or Owner

THE STANDARD LIME AND STONE COMPANY maintain a staff of experienced Insulation Engineers to assist architects, engineers and owners with their insulation problems. The valuable services of these men are at your disposal. Why not discuss your insulating problems with them.

If you so desire, one of these men will be sent to make an inspection at no cost or obligation to you. He will then be able to answer your question as to the exact cost of application of Capitol Rock Wool, as well as to recommend the parts of the house where it should be used to best advantage.

Meanwhile, remember that this entire cost will undoubtedly be covered within a winter or so by the saving in fuel and in doctors' bills. Besides, the house will be far more saleable.

Whatever the Construction of the House, the Pneumatic Method Reaches Every Corner in the Air Spaces, Packing Them Solidly with Capitol Rock Wool

Specifications and bulletins on any items will gladly be sent on request.

OTHER INSULATION PRODUCTS

OF THE STANDARD LIME AND STONE COMPANY

Capitol Commercial Rock Wool—This is the raw wool as first produced. Suitable for any purposes where insulation can be packed manually to a density of 8 lbs. per cu. ft., which is usually sufficient to eliminate settling from vibrations. At this density, thermal conductivity is 0.265 B.t.u. Minimum recommended wall thickness desirable, 3⅝ in.

Capitol Rock Wool Blankets—Reinforced felted form designed primarily for commercial and industrial purposes and of special interest to the heating and industrial engineer for insulating boiler settings, fire walls, boiler breechings, smokestacks within buildings, tank cars, hot water heaters, boilers, oil stills, bubble towers, large diameter pipes, ducts, etc., and for absorbing sounds set up by machinery.

Capitol Rock Wool Insulating Blocks—A compressed, pliable product particularly interesting to the heating and industrial engineer for temperatures up to 750° F., as an insulator for domestic furnaces, boilers, and hot water tanks; for commercial boilers, tanks, ducts, stills, and breechings.

Capitol Rock Wool Pipe Coverings—A pipe covering of interest to the heating and industrial engineer, with canvas or with waterproof cover, manufactured in 36-in. sections, for temperatures from 60° below zero to 1250° F. Recommended for lines carrying hot, cold, or ice water, low pressure or superheated steam, or refrigeration lines.

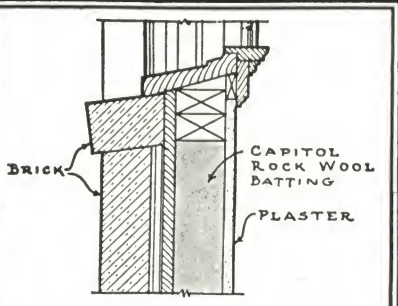
Capitol Rock Wool Insulating Cements—These cements were developed to fill the heating engineers' need for a plastic form of insulation that can be quickly and neatly applied. Produces a monolithic covering which needs no reinforcing up to 1½ in. It is a dry form supplied in 50-lb. bags—to be mixed with water when used. No. 49, a low temperature cement, is recommended for temperatures up to 500° F.; No. 52, a high temperature cement, is recommended for temperatures up to 1650° F.

Capitol Rock Wool Finishing Cement—Developed for use as a finishing coat for Nos. 49 and 52, where such coat is desired. Not an insulation, but, when applied in a thin coat, will trowel to a hard, durable, white finish.

Engineering Service for the Equipment Manufacturer

We work with many equipment manufacturers. Let us give you specific information on your insulation problems. Capitol Rock Wool insulations are not only efficient and inexpensive, but very easy to install. Specifications and bulletins on any items on request.

DETAILED SPECIFICATIONS SHOWING METHODS OF CAPITOL ROCK WOOL INSTALLATION IN RESIDENCE CONSTRUCTION

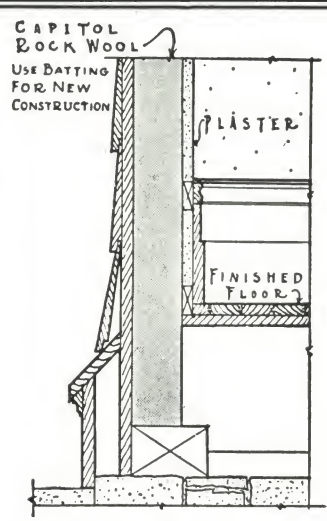


CAPITOL ROCK WOOL INSULATION FOR BRICK VENEER WALL.

Exterior Walls

New Work: Insulate between studding with wall thickness of Capitol Rock Wool Batting, cut 15 in. x 23 in. as insulation and fire retardant.

Old Work: Use pneumatic method to fill with Capitol Granulated Rock Wool Insulation.



CAPITOL ROCK WOOL INSULATION OF SIDE WALL AT FOUNDATION.

Unfinished Attic Rooms

Insulate top area with 4-in. fill of Capitol Granulated Rock Wool; side walls with wall thickness of Capitol Rock Wool Batting, pressed securely between studding.

Finished Attic Rooms

Use 4-in. fill of Capitol Granulated Rock Wool for insulating flats and slopes by pneumatic method. Use wall thick Batts on knee walls between studding.

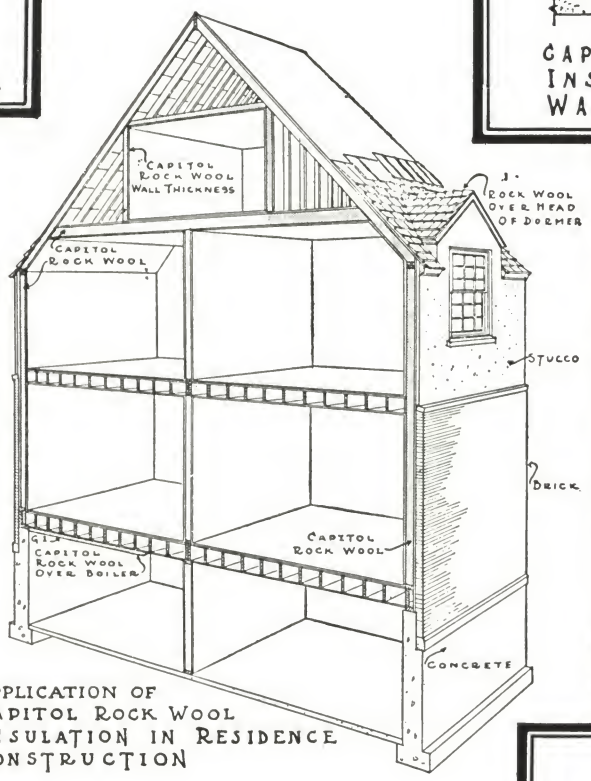
Roof—Sloping

Unfinished: Use Capitol Rock Wool Batting, 4-in. thickness, applied manually.

Finished: Fill with Capitol Granulated Rock Wool, applied pneumatic method.

Roof—Flat Construction

Apply 4-in. fill Capitol Granulated Rock Wool.



APPLICATION OF CAPITOL ROCK WOOL INSULATION IN RESIDENCE CONSTRUCTION

Attic Floors

Unfinished: Fill flat areas manually with 4 in. of Capitol Granulated Rock Wool or with Rolled Felt.

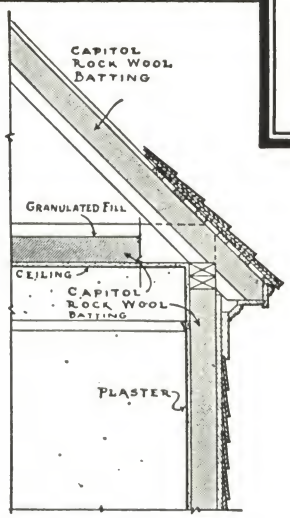
Finished: Use pneumatic method to fill flat areas with Capitol Granulated Rock Wool.

In each case, for sloping areas above or below the floor line, use Capitol Granulated Rock Wool manually and pneumatically respectively.

Dormers

Unfinished: Insulate heads of dormers with wall thickness of Capitol Rock Wool Batting.

Finished: Fill with Capitol Granulated Rock Wool applied pneumatic method.



CAPITOL ROCK WOOL INSULATION FOR SIDE WALL AND ROOF.

Interior Partitions

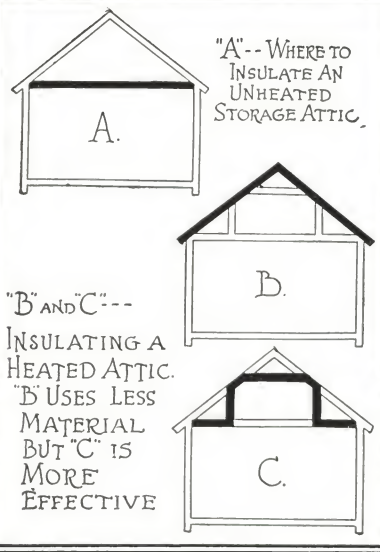
New Work: Use wall thickness Capitol Rock Wool Batting, placed between studding.

Old Work: Use fill of Capitol Granulated Rock Wool, pneumatic method.

Other Interior Floors

Unfinished: Use a 4-in. fill of Capitol Granulated Rock Wool applied manually, for insulation, sound deadening, and as fire retardant.

Finished: Same, by pneumatic method.



AGASOTE MILLBOARD CO.

Manufacturers of Quality Products Since 1909
TRENTON, N. J.

THE ALL-WEATHER ALL-PURPOSE BUILDING BOARD

HOMASOTE

REG. U.S. PAT. OFF.

Type I.P. and M.N. Are Fire Resisting, Light Weight and Insulating

Homasote is a combination insulation and structural material in substantial board form. It is an all-weather all-purpose board—used extensively indoors and out. Weatherproof, repelling moisture and dampness, resists air infiltration and is a sound deadener. A homogeneous board, free from laminations, no layers to peel off; has 33% to 56% more material than any one-half inch fibre board. It is not brittle, therefore breakage need not be estimated when using Homasote all-weather all-purpose building board.

Larger Sheets—Speed in erection, minimizing hand labor, joints and unnecessary accessory materials. Average size walls can be covered in one piece, eliminating wall paper cracking at joints.

Homasote at Home in Trenton Yards
Protection from the elements unnecessary

Unusual Sizes—

8x14 ft. 8x12 ft.
8x10 ft. 6x12 ft.
4x14 ft. 4x12 ft. 4x10 ft.
4x9 ft. 4x8 ft.
Lath, sizes, 18 in. wide, 48 in. long, $\frac{1}{2}$ in. thick.

Durability—Entire exteriors and interiors of all structures of the first Byrd Expedition in the Antarctic covered with Homasote. When life and equipment needed the fullest protection, when winds attained a velocity as high as 65 miles per hour, and temperature prevailed as low as 70° below zero Homasote withstood its every test and proved its right to be known as the all-weather all-purpose building board.

Tide Mill Tavern near Bridgeport, Conn.
Exterior and interior of Homasote

Leading Testing Laboratories of National Prominence Have Made These Tests

Insulating Qualities (B.t.u. Values)—see chart No. 1.
High Moisture Resistance—see chart No. 2.
Structural (Tensile, Transverse) Strength—see chart No. 3.
Resistance to Air Infiltration—see chart No. 4.
Plaster Adhesion—see chart No. 5.
Nail Holding—see chart No. 6.
★Tests made by J. C. Peebles, Armour Institute of Technology, Chicago.
†Test made by Robert W. Hunt Co., Chicago.
•Test made by Lewis Institute, Chicago.
Complete information concerning these tests promptly mailed on request.

Byrd Expedition Bunkhouse
Protection from the elements assured

Other Qualities of Homasote

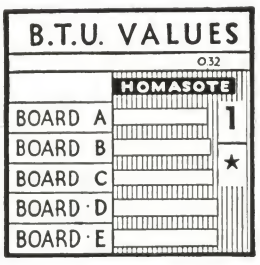
ASHB RE EXPED LITTLE AMERICA VIA SAN FRANCISCO 29th APRIL 1934

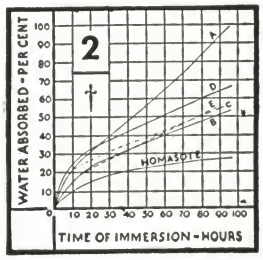
Mr. HAROLD C. HARVEY, PRESIDENT
AHASOTE MILLBOARD COMPANY
TRENTON, NEW JERSEY

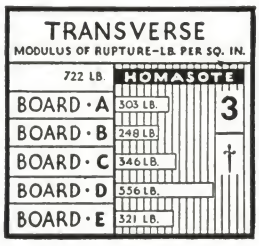
THE HOMASOTE BUILDING BOARDS USED IN CONSTRUCTION OF BUILDING OF FIRST LITTLE AMERICA SERVED PURPOSES SPLENDIDLY STOP THEY HAVE WITHSTOOD THE COLD AND STORMS OF SIX YEARS AND ACCORDING TO THE EXPEDITION CARPENTERS ARE JUST AS GOOD AS WHEN THEY WERE PUT ON.

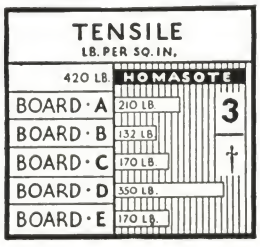
RICHARD E. BYRD

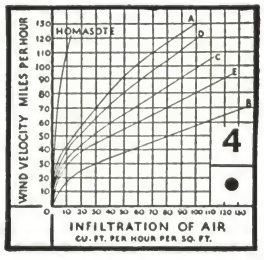
The natural color and surface texture of Homasote is most pleasing and the panels are often left unfinished when used for room interiors but, where it is desired to have them colored with either water or oil paint or with plastic or textural paint, Homasote presents an excellent surface for the reason that the paint or plasic strikes into the material and offers a firm fixative base for succeeding coats.

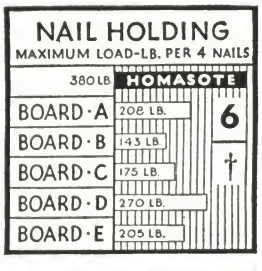


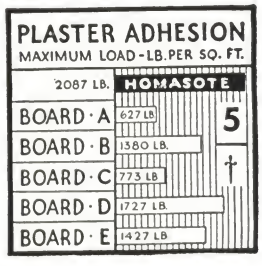












HOMASOTE *Restful* FLOORING

REG. U.S. PAT. OFF. (PAT. APPLIED FOR)

"The Flooring You've Always Wanted"

The Homasote Base Makes It Restful
The Quality Top Makes It Durable

The triple-combination floor—(1) a finished top-flooring. (2) Linoleum or rubber covering. (3) Insulation and sound absorption.

The base of this flooring is Homasote, a chemically treated homogeneous material with a hardened surface. The base insulates against heat or cold, repels moisture and dampness, resists air infiltration, deadens sound and is resilient to walk upon.

Upon this base the top covering is applied at the factory in large size sheets, sufficient to cover an average size room in two or three pieces; this flooring is easily laid by any average mechanic with ordinary woodworking tools.

It comes in $\frac{13}{16}$-in. thickness and is laid directly over the first rough flooring boards in new work or over old finished floors in remodeling work. Various types of door saddles readily compensate for differences in floor height.

Homasote "Restful" Flooring comes in several colors—combinations that harmonize with any color scheme or decoration. In sheet sizes 3, 2 and 1 ft. wide by 14, 12, 10, 9, and 8-ft. lengths.

It is economical and ideal for small homes, cottages or seashore apartments where covered floors give added attractiveness and make for ready sales and rentals. For the breakfast nook, kitchen, pantry, bath, vestibule, sun parlor, porch, library, dance, billiard or game room; an attic playroom for the kiddies or a "grill" for dad in the basement. Where quietness is essential, as in laboratories, doctors' or dentists' offices, reception rooms, etc.—Homasote "Restful" Flooring is invaluable.

Wainscoting

Homasote "Restful" Flooring is ideal for wainscoting in offices, hallways, corridors, hospitals, or theatre lobbies, either used with the flooring or as a separate unit. Full descriptive literature will be promptly mailed on request.

6x12 FT., 8x10 FT.—HOMASOTE BIG SHEETS—8x12 FT., 8x14 FT.

Cover the average size wall in one piece, eliminating 22 joints per thousand square feet in the average house. A considerable saving in the cost of batten strips and the labor to apply and paint. Homasote *Big* sheets only require one-third as many nails for an equivalent area—a big saving in labor. Many ceilings can be done in one piece. For ceilings larger than 8x14 ft. a large field panel may be used with a border around it. *Big* sheets are essential for wallpapering. Wallpaper will crack if applied over joints. *Big* sheets *cannot* be plastered over, but can be used where a hard texture finish is desired, providing a decorative moulding is used to cover joints between sheets. Studding 16 in. o.c., nails 10 in. o.c.

For a plaster base inside use Homasote Lath. Size 18 by 48 in. and so strong it does not run away from plasterer's trowel. It will withstand severe blows without giving way, its plaster adhesion is greater than metal lath. Lath must not be used on studding or ceiling joists spaced over 16 in. o.c. Standard three-coat plaster work of ½-in. minimum thickness *must* be used.

Homasote *Big* sheets are used for insulation and as a base for wallpaper and paint, inside, in lieu of plaster, for the exterior of homes, cottages, schools, beach houses, playhouses, barns, prefabricated and portable houses, window display backgrounds, partitions, etc.

Note: Homasote *Big* sheets *must* be expanded before application. Regardless of decorative treatment, whether wallpaper, paint, hard texture or sand finish, all joints *must* be covered with moulding strips. For stucco, metal lath *must* be used.

HOMASOTE **BIG** SHEET GOING THROUGH A 2'-6" x 6'-8" DOOR

THE METHOD SHOWN HERE CAN ONLY BE USED FOR HOMASOTE PANELS

OTHER "SOTE" PRODUCTS

Sand Finish (Homasote)—Presents a beautiful stuccolike appearance that will not crack, check, or peel off. Can be finished in any color scheme and is practical for outside walls or gables.

Thermasote—A dual-purpose board for insulation and in lath for plaster base—a tight verminproof material.

Vehisote—A dense, rigid board that can be tooled or steam bent to moderate curvings. For bulkheads or other boat work. Used by Maxfield Parrish for murals.

Suede Finish (Hardboard)—For beautiful interiors and window trim—a new kind of decorative material—soft, velvety effects; lends dignity and character to any window display or interior decoration in bright colors or pastel shades.

Homasote Type MN—A fire-resistant insulating board, from ½ to 4 in. thickness, for walls, ceilings, partitions.

Homasote Q-Bord—The Q to attractive remodeling—for office partitions, closets, ceilings, or any interior improvement. Will not split, crack, warp, nor chip.

Homasote Hardboard—For home, office or commercial use—where strong, grainless, rigid board is desired.

Samples and descriptive literature of all products manufactured by the Agasote Millboard Company mailed promptly on request. In all probability there is a factory representative in your vicinity ready to call and to cater to your needs.

ATLAS SUPPLY COMPANY

Manufacturers of Adhesives for Insulating Materials

4502 High St., MANAYUNK, PHILADELPHIA, PA.

Products

AcouSTICK; Atlas Adhesive No. 16; Atlas Adhesive No. 39; Atlas Wallboard Cement; Atlas Linoleum Paste; Atlas Waterproof Linoleum Cement; Atlas Waterproof Tile Cement.

AcouSTICK

A plastice waterproof cement for fastening all types of acoustical tile, hair felt and similar acoustical material to all kinds of surfaces, on walls and ceilings. It is very easily applied, and because of its great initial power, materials to be cemented do not require shoring or nailing, or support of any kind.

It remains flexible indefinitely and thereby provides for expansion and contraction of the surfaces or the material which is cemented to them. Shipped in one, two, three and five-gallon cans. Weight approximately twelve pounds to the gallon. Each gallon will fasten from thirty to sixty 12x12-in. tile, depending on the weight of the tile and the evenness of the surfaces.

Atlas Adhesive No. 16

A plastic waterproof cement for fastening cork, asbestos, hair felt, decorative glass, bakelite and all types of insulating material to every kind of surface. Used largely for fastening various insulating materials to metal ducts in air conditioning installations. The use of this cement eliminates shoring or wiring. Also used for laminating cork and materials of this kind, and for thousands of other purposes, including ceramic, marble and other kinds of tile on remodeling jobs.

New U. S. Custom House, Philadelphia, Pa.
Atlas AcouSTICK, Atlas Rubber Tile Cement and Atlas Linoleum Paste used in this building

Atlas Adhesive No. 39

A waterproof liquid cement for cork and felt pipe coverings and for synthetic cork, and hair felt where these materials are used for sound absorption and similar purposes. It can be applied with a brush and covers about one hundred square feet to the gallon.

Atlas Wallboard Cement

Heavy Body—A waterproof cement for fastening all types of wallboard to any kind of surface without stripping or nailing.

Light Body—A waterproof liquid cement for building up and joining all types of wallboard. Mouldings, decorating panels and trim can be fastened to the base wallboard with this cement which eliminates unsightly brad holes.

Atlas Linoleum Paste

For fastening all kinds of linoleum and sheet rubber flooring to wood or concrete floors.

Atlas Waterproof Linoleum Cement

For fastening linoleum to wood, concrete or metal surfaces where a waterproof adhesive is required.

Atlas Waterproof Tile Cement

A waterproof liquid cement for fastening rubber, cork, linoleum or composition tile to any kind of surface.

Special Cements

We develop cements for special purposes. If you have an adhesive problem, get in touch with us. All Atlas cements are shipped in one, two, three and five-gallon containers and weigh approximately twelve pounds to the gallon.

Some Jobs Where AcouSTICK Has Been Used

Radio Broadcasting Stations: WCAU, WFI, KYW, WDAS, WIP, WCW, WGN, WSMK, KDKA, KNX.
Naval Air Station, Sunnyvale, Calif.
Overland Terminal Warehouse, Los Angeles, Calif.
St. Elizabeth's Hospital, Washington, D. C.
U. S. Veterans' Hospital, Roanoke, Va.
Barracks Nos. 4, 5 and 6, Fort Benning, Ga.
Georgia Baptist Hospital, Atlanta, Ga.
Genessee Building, Buffalo, N. Y.
Frederick & Nelson Fountain Lunch, Seattle, Wash.
Irvington School, Portland, Ore.
University of Washington, Seattle, Wash.
The Sturgis Memorial Hospital, Sturgis, Mich.
City Hall, Columbus, Ohio
H. C. Frick Training School, Pittsburgh, Pa.
Pennsylvania State College, State College, Pa.
Municipal Building, Monticello, Ark.
Veterans' Hospital, Little Rock, Ark.
Miller Mutual Fire Insurance Bldg., Alton, Ill.
Equitable Life Insurance Co., Des Moines, Iowa
Iowa State College, Mason City, Iowa
Waldorf-Astoria Hotel, New York, N. Y.
Colgate-Palmolive-Peat Co., Jersey City, N. J.
Consolidated Gas Co., New York, N. Y.
Columbia University, New York, N. Y.

We can name a job in your locality (for inspection and reference) where Atlas AcouSTICK has been used.

CELOTEX

BRAND

INSULATING CANE BOARD

REG. U. S. PAT. OFF.

The Celotex Corporation, Chicago, Illinois

The Celotex Corporation

919 NORTH MICHIGAN AVENUE • CHICAGO, ILLINOIS

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BUENOS AIRES, ARGENTINA

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• EXPERIENCE

World-wide experience, coupled with intensive research and field investigation, have made Celotex Products foremost in the insulation field. Every phase of the utilization of cane fibre and the application of insulation and acoustical correction have been carefully studied until today the products of this Corporation are of such nature as to inspire the complete confidence of Architect, Dealer, Builder, Decorator, and Owner. Installations have been made in over 500,000 buildings representing every type of construction.

• MANUFACTURING FACILITIES

The plant, located at Marrero, La., just across the Mississippi River from New Orleans, is in the heart of the sugar cane growing districts and strategically located with respect to economical transportation facilities by water and rail. More than one billion square feet of Celotex have been produced.

• DISTRIBUTION

Celotex is marketed nationally through lumber dealers. Stocks are maintained in all the principal centers and are available practically everywhere. Acousti-Celotex is applied by authorized contracting acoustical engineers.

• SERVICE

A Building Service Department is at the disposal of architects interested in the use of Celotex Products. Advice on special problems is always available. A competent Farm Department, in constant touch with agricultural conditions throughout the country, will furnish information upon request.

• CERTIFIED INSULATION — GUARANTEE

Celotex Cane Fibre insulating board is guaranteed by The Celotex Corporation to meet all the requirements of Commercial Standard CS 42-32 for fibre insulating board as issued by the U. S. Department of Commerce, Washington, D. C.

• ECONOMY

Celotex usually pays for itself through actual saving in fuel bills. An accurate comparison of walls and roofs as to their insulating value, and comparative fuel requirements is contained in the folder "Insulation Data," in which the same values and methods of computation are used as in the Guide of the American Society of Heating and Ventilating Engineers.

PHYSICAL PROPERTIES

CELOTEX
BRAND
INSULATING CANE BOARD
REG. U. S. PAT. OFF.

• THERMAL CONDUCTIVITY

The thermal conductivity of Celotex has been established by many nationally known laboratories (U. S. Bureau of Standards, Armour Institute of Technology, and others), the average conductivity established by test in these laboratories being .33 B.t.u. per hour, per square foot, per degree F., per inch thickness.

• STRUCTURAL STRENGTH

Tests made by The University of Minnesota, The R. W. Hunt Company, and Columbia University show the distortion of a $\frac{1}{2}$ in. Celotex sheathed wall under a thrust of 1600 lbs. (near the maximum strength of a wall sheathed horizontally with wood) to average 0.23 in. The distortion of a wood sheathed wall under similar tests averaged 4.88 in.

• FIRE RESISTANCE

Due to its high insulative value, light weight, and the absence of open joints, it retards the spread of fires.

• MANUFACTURE

Celotex is made from bagasse—the vegetable fibre waste of sugar cane after the sugar has been extracted. This fibre, in addition to its economic value and its practically limitless supply, is ideal for the fabrication of structural insulation board because the individual fibres are usually long, tough, and strong; and, even untreated, their normal resistance to deterioration assures extraordinary durability. Due to climatic conditions in Louisiana, the characteristics of Louisiana bagasse are not present in sugar cane fibre produced elsewhere.

During the processes of manufacture the cane fibres are cooked and repeatedly washed. The cooking dissolves all soluble matter and the washing removes it. The clean fibres are chemically treated (waterproofed) so that the entire board throughout its thickness is highly water resisting.

The clean cane fibres after Ferox processing and while still wet are felted or firmly interlaced and securely interwoven (without the addition of any adhesive) into continuous boards 12 ft. wide and over 1,000 feet long. The wet board passes through driers heated to 350° F. or more which not only dries the board but results in a **sterile product.** Careful technical control assures uniformly high quality.

• THE FEROX PROCESS

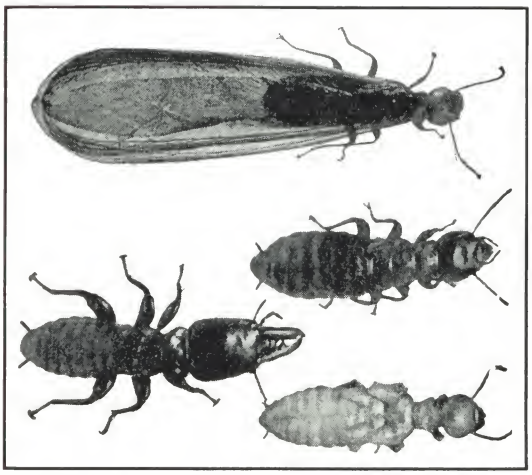
Toxic to Fungi and Termites (White Ants)

Ferox Process is the result of ten years of experimental research by the Celotex Research and Development Department and is patented in the United States and in foreign countries.

In this process the individual fibres, in their wet state and before formation into the board, are coated with a chemical complex which has proven toxic to fungi, termites, and similar cellulose destroying organisms. The chemical complex is **insoluble in water, non-volatile, odorless, permanent,** and in no way alters the physical properties, appearance, or utility of the finished products. It presents no hazards to human beings or domestic animals.

Ferox process treatment is integral—not a mere surface treatment. This outstanding feature has been added to **all Celotex Cane Fibre Products.**

WHAT IT IS . . . AND HOW IT IS MADE . . .



These offensive looking insects are Termites (White ants)—several times enlarged. These destructive pests attack cellulose containing materials as a source of food. They work with rapidity and thoroughness. Termites may enter a building at any exposed place—through a crack, for example—and begin their destructive work. Celotex is protected from such attacks by the exclusive Ferox Process [Patented].

CELOTEX THERMAL INSULATION PRODUCTS

• CELOTEX BUILDING BOARD

The original cane fibre insulation. Neutral gray-tan with two distinct surfaces—one side has a tapestry textured finish, the other a smooth sanded finish. Furnished also in colors Nos. 55-75-82 as described under **Tile Board.**

Sizes—4'x4', 4'x5', 4'x6', 4'x7', 4'x8', 4'x8½', 4'x9', 4'x9½', 4'x10', 4'x12'. **Thicknesses**—½ and 1 inch.

Uses—Furnishes insulation, at the same time structurally used as: sheathing under wood siding, stucco, masonry veneer, and shingles; as roof boarding under shingles, slate, tile, or similar rigid units; as exterior finish; as interior base for plastic paint and wall coverings; as interior finish.

• CELOTEX SHEATHING BOARD

A sturdy material combining extra insulation value and structural strength.

Sizes—4'x4', 4'x5', 4'x6', 4'x7', 4'x8', 4'x8½', 4'x9', 4'x9½', 4'x10', 4'x12'. (Also furnished in 6 or 8 ft. widths, not sanded.) **Thicknesses**—½, ¾, and 1 inch.

Uses—For use as an insulating sheathing, roof boarding, exterior finish.

• CELOTEX ORNAMENTS AND MOULDINGS

A number of attractive Mouldings and square and round Ornaments, made of Celotex, are available to make possible a finished artistic effect hitherto available only in ornamental plaster and carved wood. **Sizes of Ornaments:** 12"x12", and 16"x16", square. One 22" diameter, round. Mouldings range from ¾" cove to 6" pilaster to 9" border type. See page 11.

• CELOTEX LATH

A patented insulating plaster base. Long edges are ship-lapped and all edges are beveled to reinforce plaster against cracking and to eliminate unsightly lath marks. Tests made to determine the bond of gypsum plaster to Celotex show a holding power of 1000 lbs. per sq. ft.—stronger than that attained where plaster is applied over many other types of plaster base.

Size—18 x 48 inches. **Thicknesses**—½, ¾, and 1 inch.

Use—As a continuous insulating plaster base.

• CELOTEX TILE BOARD

Celotex Cane Fibre Board in units with beveled edges—a finished wall or ceiling material. Furnished with Type Double A reversible bevel joint in ½" thickness only, whereby either side can be exposed, thus offering the possibility of many unusual designs. Also furnished with other joints in ½", ¾", 1" thickness.

Sizes—6"x6", 6"x12", 8"x8", 8"x16", 12"x12", 12"x24", 16"x16", 16"x32", 16"x48", 18"x32", 18"x48", 24"x24", 24"x48".

Colors and Surface Textures—No. 53 Natural, one side Sanded, other side Tapestry Texture; No. 55 Natural Rippled and Sanded; No. 75 Light Brown Rippled and Sanded; No. 82 Ivory Smooth Finish.

Use—An attractive wall and ceiling treatment which is easily and quickly installed. Provides efficient insulation from heat, cold, and noise.

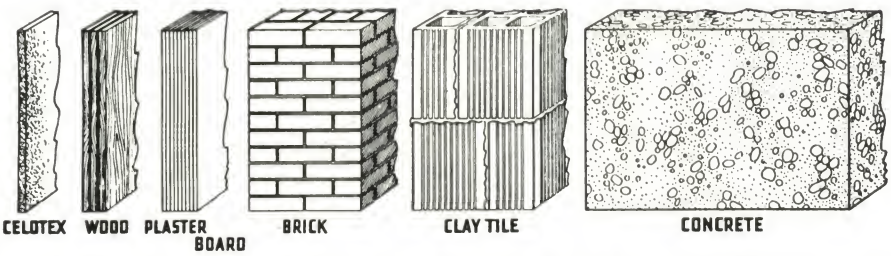
• CELOTEX FINISH PLANK

Made from selected Celotex Cane Fibre Board in special widths long edges beveled and beaded. Furnished with Type Double A, reversible bevel joint, an interlocking joint whereby either side can be exposed, offering the possibility of many unusual designs.

Colors and Surface Textures—Furnished in colors Nos. 53-55-75-82 as described under **Tile Board,** also No. 60, Mottled Brown, Tapestry Texture.

Sizes—6, 8, 10, 12, and 16 ins. wide x 6, 7, 8, 9, 10, and 12 ft. long. **Thickness**—½ inch.

Use—For interior finish where either regular or random planking effect is desired. Provides efficient insulation.



The insulation value of 1" of Celotex is equal to three 1" wood boards; or nine ½" layers of plaster board; or a 15" wall of common brick; or a 16" clay tile wall; or a 36" concrete wall.

• CELOTEX ROOF INSULATION

Celotex Cane Fibre Board. For insulation over roof decks under built up roofing, slate, or tile.

Size—22 x 47 and 24 x 60 inches. 1/2 in. thick and multiples thereof up to 4 inches (8 ply).

• CELOTEX VAPORPROOFED ROOF INSULATION

Ferox treated Celotex, fabricated, dried, and edge coated with a film of high quality asphalt. While asphalt is still hot, a vaporproofing membrane is applied and all laps and folds securely sealed with hot asphalt. Each unit is cooled under pressure to assure permanent adhesion.

Size—22 inches by 47 inches. **Thickness**—1, 1 1/2, 2 inches, and multiples of 1/2 inch.

• CELOTEX VAPORPROOFED LOW TEMPERATURE INSULATION

Factory sealed, low density insulation. Comes encased in a vaporproofing, waterproofing covering. Has conductivity of 0.30 Btu. per inch thickness. Ample structural strength.

Sizes—18 x 36 inches, 18 x 18 inches, 9 x 36 inches. **Thicknesses**—1, 1 1/2, 2, 3, 4 inches or any multiple of 1/2 inch.

Uses—For severe cold storage requirements, including coolers, freezers, fruit and vegetable rooms, packing plants, breweries, creameries, fur storages, air conditioned spaces, general cold storage rooms, etc.

• CELOTEX FEROX INSULATING PROTECTION COURSE

Provides superior protection for membrane waterproofing and dampproofing on foundations, floors, bridges, tunnels, and reservoirs. **Size**—22 x 47 inches. **Thickness**—1/2 and 1 inch.

• CELOTEX ROCK-WOOL PRODUCTS

Made from carefully selected natural rock, melted in a furnace and blown into hair-like fibres by high pressure steam. The material is high in insulating efficiency, permanent, and incombustible.

Batts—Wall thick x 15 inches wide x 23 inches long. The batts are waterproofed during manufacture. They are pliable and easy to handle and install.

Loose Wool—For packing into open spaces.

Granulated Wool—For pouring into enclosed spaces.

OTHER CELOTEX PRODUCTS

• CELOTEX HARDBOARD

Rigid, tough, grainless, and moisture-resisting. Available tempered or untempered. **Sizes**—4'x2', 4'x3', 4'x4', 4'x6', 4'x8', 4'x9', 4'x10', 4'x12'. **Thickness**—1/10, 1/8, 1/4, 3/16 and 5/16 inch.

• CELOTEX HARDBOARD TILE (Tempered only)

A tempered fibre board, moisture-proof, permanent, and paintable. Impressions which are stamped into the board during manufacture mark the surface into a 4-in. square tile-like pattern. Readily takes enamel or lacquer finish.

Size—4'x12'. **Thickness**—1/8 or 3/16 inch.

• CELOTEX PANEL BOARD

A quarter-inch fibre product of strength, stiffness, moisture-resistance. **Sizes**—4'x1', 4'x2', 4'x3', 4'x4', 4'x6', 4'x8', 4'x9', 4'x10'. **Thickness**—Approximately 1/4 inch.

• CELOTEX STUDIO BOARD

A tough, integral fibre board with a light brown color, permanent and paintable. **Sizes**—4'x2', 4'x3', 4'x4', 4'x6', 4'x7', 4'x8', 4'x9', 4'x10', 4'x12'. **Thickness**—1/4 inch.

• C-X WALLBOARDS

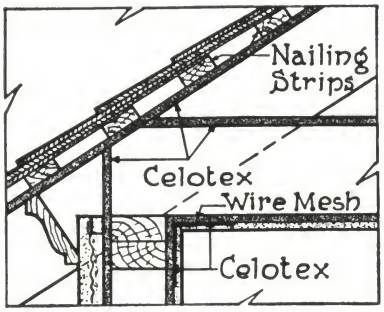
Orange Label—(Caliper thickness approximately .195). Dead level surface, both sides varnish sized to take all decorative treatments, particularly water color paint, widely used in display background work. **Sizes**—32 and 48 in. wide; 6 to 12 ft. long. 14 and 16 ft. lengths also furnished.

Blue Label—(Caliper thickness approximately .175). Pulp wallboard. Smooth, beater-sized surfaces. Serviceable for general wallboard uses. **Sizes**—32 and 48 in. wide; 6 to 12 ft. long.

Green Label—(Caliper thickness approximately .165). Utility pulp wallboard—one side stained green. Adaptable to every wallboard purpose. **Sizes**—48 in. wide; 6 to 12 ft. long.

CELOTEX
INSULATING CANE BOARD

DETAILS SHOWING APPLICATION OF CELOTEX TO FRAME CONSTRUCTION



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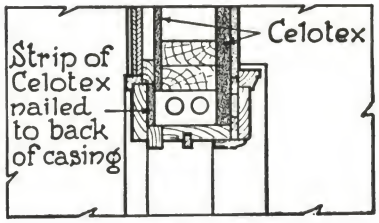
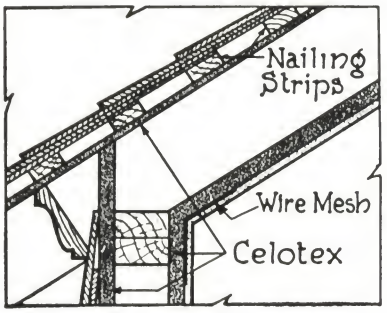


JAMB



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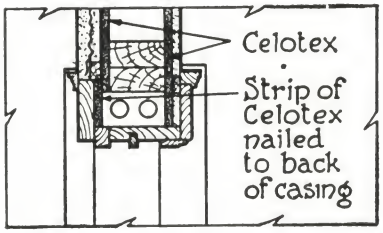

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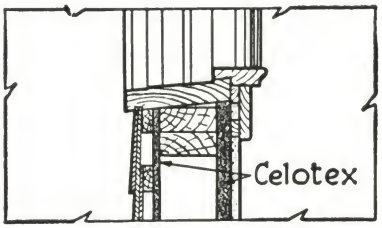
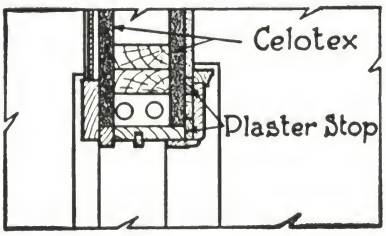


SILL

SHINGLES ON WOOD FRAMING.
½" Celotex Sheathing
1" Celotex Lath.



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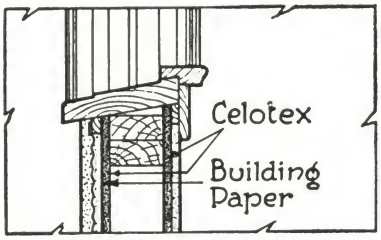

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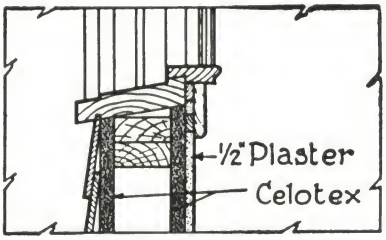

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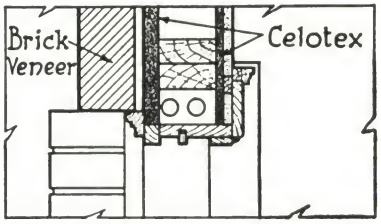

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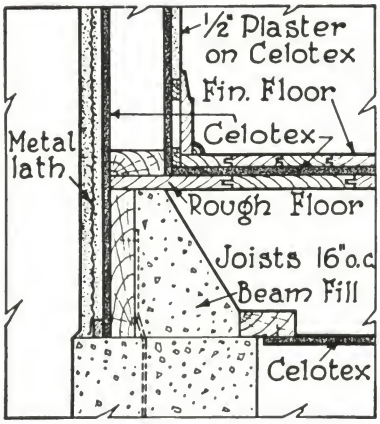
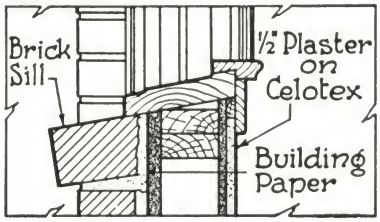
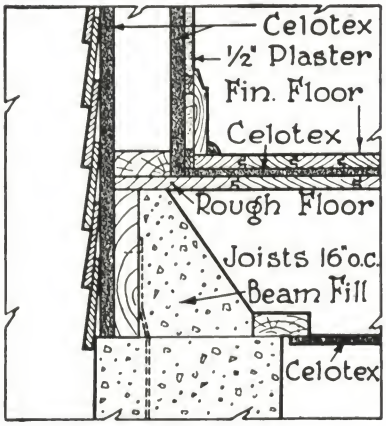


STUCCO ON WOOD FRAMING
½" Celotex Sheathing
½" Celotex Lath.



SILL

BRICK VENEER ON WOOD FRAMING
¾" Celotex Sheathing
½" Celotex Lath.



WOOD SIDING ON WOOD FRAMING
¾" Celotex Sheathing
1" Celotex Lath

APPLICATIONS OF CELOTEX

Celotex Building Board
Celotex Sheathing Board } Application As Sheathing and Exterior Finish

On Walls—As sheathing under wood siding, stucco, masonry veneer, and shingles laid over furring strips.

On Walls—As exterior finish.

On Roofs—As roof boarding under shingles, slate, tile, or similar rigid units which are laid over furring strips.

(1) Framing

All framing shall be 12 in. or 16 in. on center.

(2) Material

(Sheathing) (exterior finish) (and) (roof boarding) shall be Celotex Building Board or Celotex Sheathing Board. Boards shall be (½) (¾) (1) in. thick; 4 ft. wide by length best adapted.

The following *(wall) (and) (roof)* areas shall be covered:

Note: Here list and locate. If more than one thickness is used, list separately and the respective areas covered.

(3) Application

(3a) Moistening for Exterior Finish—Moisten and pile Celotex Building Board or Celotex Sheathing Board used for exterior finish one day before application. Moistening shall be accomplished by sprinkling lightly with a hose or sprinkling can or from a broom dipped into a pail of water. Remove boards from the pile just prior to nailing to the framing.

(3b) General—Insulation continuity shall be maintained. Apply Celotex with the length parallel with framing members. Boards shall be of sufficient length to completely span between sills and plates or other structural nailing members. Where intermediate end joints are necessary, provide 2x4 in. nailing headers cut in between framing members. All joints shall center over framing.

(3c) Spacing—Space boards ⅛ in. apart at all edges. At window and door frames bring Celotex in close contact with frame members.

Note: Celotex boards are ⅛ in. less than full theoretical dimensions to allow for spacing as above on standard framing 16 in. on centers.

(3d) Nails—

(1) Use standard ⅜ in. head 1½ in. galvanized roofing nails for ½ in. thick Celotex.

(2) Use 8d common nails for ¾ in. and 1 in. thick Celotex.

(3e) Nailing—First nail Celotex to intermediate framing members and then nail the edges. On intermediate framing members, space nails 6 in. apart. At all edges space nails 3 in. apart and ⅜ in. away from the edge. Drive nails until the heads are slightly below the Celotex surface.

(3f) Painting Exposed Exterior Finish—After proper sizing or priming, the surface should be given two coats of a good lead and oil paint. Painting should be done before battens or wood trim are applied over joints.

SUPPLEMENTARY PROVISIONS—Application 1

Note: Provide for the following in other specification divisions when and where they apply.

Note: Celotex is not a nailing base.

(1A) Construction

Following the standard recommendations of the Building Code Committee of the U. S. Department of Commerce for all wood framing. All inner stud spaces shall be securely blocked off at plates and sills to prevent free circulation of air through such places.

(1B) Wood Siding

All joints shall butt over the center of a stud. Nail through Celotex to each stud using nails of sufficient length to pass through the Celotex and penetrate the stud at least 1 in.

(1C) Masonry Veneer

Masonry veneer shall be laid in the usual manner allowing not less than ½ in. space between the face of the Celotex and the back of the veneer.

Metal ties for masonry veneer shall be nailed through Celotex into the studs. Nails shall be of sufficient length to pass through the Celotex and penetrate the framing studs at least 1 in.

(1D) Exterior Stucco

(a) Flashing—Flash over the head casings of all windows and doors with metal.

(b) Waterproof Building Paper—Cover all Celotex surfaces beneath exterior stucco with a continuous layer of asphalt coated waterproof paper.

(c) Self-furring Stucco Base—Self-furring stucco bases such as beveled wood lath and various forms of self-furring wire and expanded metal lath, shall be applied directly over Celotex and paper, nailing or stapling through the Celotex into the studs with standard penetration into the wood.

(d) Non-Furring Stucco Bases—

(d1) Provide 1x2 in. wood furring strips nailed vertically to each stud over Celotex and paper to form furring for metal lath stucco base. Nails shall be of sufficient length to pass through the Celotex and penetrate the framing members at least 1 in.

(d2) Metal furring, round steel rods, or galvanized crimped band iron shall be stapled or nailed through the Celotex into the studs with standard penetration into the wood. Metal lath stucco base shall be wired to the furring.

(1E) Furring Strips for Shingles, Etc.

(a) Provide 1x2 in. wood furring strips laid at right angles to framing members, over the Celotex, properly spaced to take shingles, slate, tile, and similar rigid wall and roof covering. Nails shall be of sufficient length to pass through the Celotex and penetrate the framing members at least 1 in.

(b) Over the Celotex, under the furring strips, apply a continuous course of *(specify brand and weight)* waterproof felt.

Note: Include the above under slate and tile roofing.

(c) Provide a 1 in. thick solid wood base over Celotex under all metal work, such as gutter aprons, valleys, hips, ridges, saddles, etc., to which to attach the metal in accordance with standard practice. Provide 2x4 in. headers spaced 16 in. o.c. cut in between rafters to form firm nailing for boards laid parallel with the rafters.

(1F) Battens and Wood Trim Over Exterior Finish

Apply battens and wood trim *(as detailed)* over Celotex with nails of sufficient length to pass through the Celotex and penetrate the framing members at least 1 in.

APPLICATION No. 2—SPECIFICATIONS

Celotex Lath — Interior Plaster Base

(1) Framing

All framing shall be 12 in. or 16 in. on center.

(2) Material

Plaster base shall be Celotex Lath. Lath units shall be (1/2) (3/4) (1) in. thick, 18 in. wide x 48 in. long, with beveled edges and shiplapped joints, delivered to the building site in the original manufacturer's packages.

The following *(wall) (and) (ceiling)* areas shall be covered:

Note: Here list and locate. If more than one thickness is used, list separately and the respective areas covered.

(3) Application

(3a) General—Do not moisten lath units before application.

Apply lath with beveled edge side out with the length at right angles to the framing *(or furring)* members. End joints shall be staggered and centered over framing members.

Where piecing out is necessary, use only strips of Celotex. Accurately cut and fit lath around all electric outlet boxes, piping, etc.

(3b) Spacing—Bring edges together in moderate contact.

(3c) Nails—

(1) Use 1 1/8 in. long, blued special plasterboard nails with 15/64 in. heads for 1/2 in. thick Celotex Lath.

(2) Use 2 1/2 in. blued nails with 15/64 in. heads for 3/4 and 1 in. thick Celotex Lath.

(3d) Nailing—Nail lath units securely to each framing *(or furring)* members with 5 nails spaced uniformly approximately 3 in. apart.

Where units are applied to form curved surfaces, first nail at center or intermediate supports and spring to the contour of the framing.

(3e) Angle Reinforcement—All corners shall be reinforced with standard metal corner beads. All re-entrant angles shall be reinforced with standard expanded metal angle lath strips. Reinforcement shall be securely stapled over Celotex Lath.

SUPPLEMENTARY PROVISIONS— Application 2

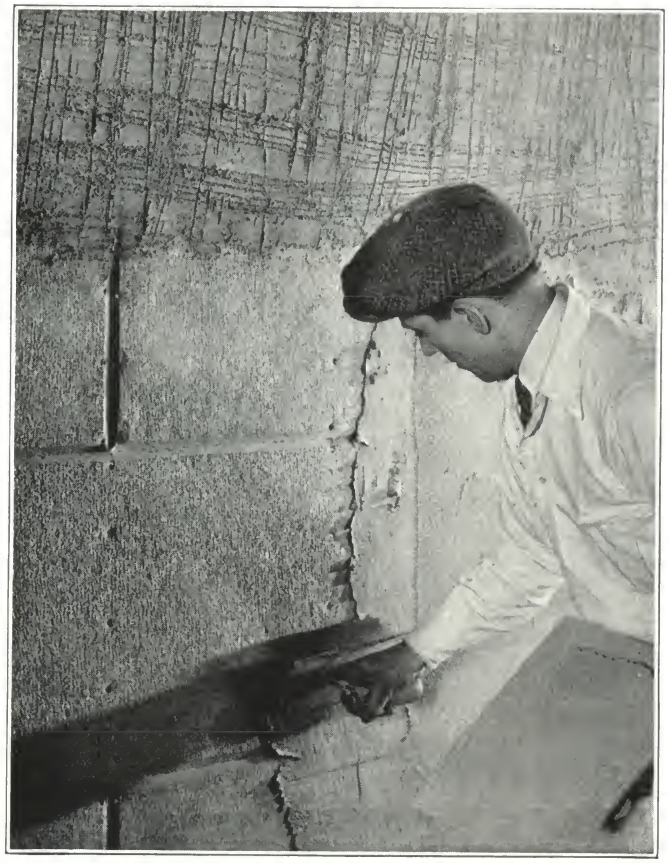
Note: Provide for the following in other specification divisions when and where they apply.

(2A) Construction

Follow the standard recommendations of the Building Code Committee of the U. S. Department of Commerce for all wood framing.

(2B) Furring

Fur all exterior masonry walls to receive Celotex Lath with *(1x2 in.) (specify)* furring strips set 12 in. or 16 in. o.c. accurately shimmed to a true, level plane. Secure substantially to masonry.



A Continuous Plastering Surface Is Provided by Celotex Lath

(2C) Grounds

Furnish and erect, substantially secured to framing members through the Celotex Lath, full 1/2 in. wood grounds for all interior wood trim.

Where 3/4 in. and 1 in. thick Celotex Lath units are used, add the necessary trim grounds on all door and window frames to compensate for this thickness plus full 1/2 in. of plaster.

(2D) Plastering

(a) Caution—Do not wet Celotex Lath before applying plaster.

(b) Inspection—Inspect nailing and notify lather of any portions of Celotex Lathing not adequately secured in accordance with the manufacturer's specifications. See that all corners and angles are reinforced with metal corner beads accurately set to line with grounds and that all re-entrant angles are reinforced with expanded metal angle strips.

(c) Plaster—Use standard gypsum cement plaster or gypsum wood fibre plaster for scratch and brown coats mixed accurately in accordance with the manufacturer's specifications. Both scratch and brown coats shall be mixed to a wet consistency to allow for application with light trowel pressure and to facilitate darbying. Use any standard plaster finish over the brown coat, such as gypsum, lime, or lime gauged with gypsum mixed in accordance with the manufacturer's specifications.

Note: Lime plaster, lime gauged with gypsum, or gypsum plaster containing more than ten percent of lime, should not be used for scratch or brown coats.

(d) Application—Apply in three (3) coats to full 1/2 in. grounds in accordance with the plaster manufacturer's specifications. Surfaces shall be rodded to a true plane. All corners and angles shall be plumb and true. Wherever necessary, and particularly on ceilings, provide plaster screeds to insure an even, uniform 1/2 in. plaster thickness.

In applying the scratch coat of plaster it shall be carefully pressed into all beveled edges and joints to provide plaster reinforcement at these vital points.

If the brown coat becomes stiff and sets during darbying, wet down the surface to allow for darbying without undue pressure against the plaster surface.

Darby strokes shall be in the direction of framing members with the darby spanning two studs or joists.

(e) Ventilation — Provide adequate ventilation for the proper drying of the plaster.

Note: Due to the moisture-proof characteristics of Celotex Lath, all plaster moisture must be carried off by the air in contact with the exposed plaster surface.

(f) Heat — Provide adequate heat to prevent injury to fresh plaster by frost.

(2E) Electric Outlets

Where 3/4 and 1 in. thick Celotex Lath units are used, set electric outlet boxes to accommodate a full 1 1/4 and 1 1/2 in. thickness from face of stud or joist to face of plaster.

APPLICATION No. 3—SPECIFICATIONS

Celotex Building Board — Interior Finish

(1) Framing

(1a) Studs and joists shall be framed to conform accurately to the design of board spacing or paneling, set 12 in. or 16 in. o.c. Use additional studs, joists, and headers where necessary. Provide headers back of all wainscot caps, chair rails, baseboards, and other heavy wood trim.

(1b) Framing to receive Celotex used as interior finish, shall be straight and shall provide a true, even nailing base.

(1c) Provide *(1x2 in.) (specify)* furring strips set according to the design and on 12 in. or 16 in. centers, accurately shimmed to a true level plane. Secure substantially to solid masonry or wood base.

(2) Material

Interior finish shall be Celotex Building Board. Boards shall be (1½) (1) in. thick; 4 ft. wide by length best adapted.

The following *(wall) (and) (ceiling)* areas shall be covered:

Note: Here list and locate. If more than one thickness is used, list separately and the respective areas covered.

(3) Cutting and Fitting

Note: Celotex may be treated with battens and mouldings covering the joints or with exposed V-joints and grooves.

(3a) **Joints to be Covered**—Cutting may be done with a fine tooth saw, using a sharp blade, with rapid strokes and a minimum of pressure. Mouldings shall be *(wood) (metal) (Celotex) (specify width and thickness)*.

Note: Celotex mouldings are available in a variety of attractive designs which add greatly to the beauty of the Celotex interiors.

(3b) **V-Joints and V-Grooves**—Cuts, bevels and V-grooves shall be made with a special tool against a straight edge and shall be clean and true.

(4) Application

(4a) **Seasoning**—The Celotex boards shall be placed singly around the room and allowed to stand at least 24 hours before erection to allow adjustment to atmospheric conditions. In exceptionally dry weather, moisten the Celotex lightly and pile the boards 24 hours before erection.

(4b) **General**—Celotex shall be applied immediately prior to the erection of interior wood trim. Apply Celotex with the length parallel with framing members with the *(smooth face) (textured face)* exposed. All joints shall center over framing members.

(4c) **Spacing (Joints to be Covered)**—Space boards 1/8 in. apart at edges.

(4d) **Spacing (Exposed and V-Joints)**—Bring boards to a moderate contact. Do not force into place.

(4e) **Nails—**

(1) For ½ in. thick Celotex, use standard 1½ in. galvanized roofing nails with ⅜ in. heads where joints are covered with battens, mouldings, or wood trim. Use 1½ in. finishing nails where nailing is exposed.

(2) For 1 in. thick Celotex, use 6d common nails where joints are covered with battens, mouldings, or wood trim. Use 2 in. finishing nails where nailing is exposed.

(4f) **Nailing**—First nail Celotex to intermediate framing members and then nail the edges. On intermediate framing members, space nails 6 in. apart. At all edges space nails 3 in. apart and approximately ⅜ in. away from the edge.

Where nailing is exposed, drive finishing nails at an angle and set the heads neatly below the Celotex surface. Where nails are covered by battens, mouldings, or wood trim, drive nails until the heads are slightly below the Celotex surface.

(4g) **Mouldings, Battens and Trim**—Apply *(as detailed)* over Celotex with nails of sufficient length to pass through the Celotex and penetrate the framing members at least 1 in.

Grill Room walls and ceiling are finished with Celotex Building Board and grooved overlays.

Celotex Building Board easily sawed or cut for accurate and close fitting for interior finish.

APPLICATION No. 4—SPECIFICATIONS

Celotex Building Board — Interior Base for Plastic Paint and Wall Coverings

(1) Framing

All framing shall be 12 in. or 16 in. on center.

(2) Material

Wall base shall be Celotex Building Board. Boards shall be (1/2) (1) in. thick, 4 ft. wide by length best adapted.

Note: Here list and locate. If more than one thickness is used, list separately and the respective areas covered.

(3) Application

(3a) Seasoning—The Celotex boards shall be placed singly around the room and allowed to stand at least 24 hours before erection to allow adjustment to atmospheric conditions. In exceptionally dry weather moisten the Celotex lightly and pile the boards 24 hours before erection.

(3b) General—Celotex shall be applied immediately prior to the erection of interior wood trim. Apply Celotex with the length parallel with framing members. Boards shall be of sufficient length to completely span between sills and plates or other structural nailing members. Where intermediate end joints are necessary, provide 2x4 in. nailing headers cut in between framing members. All joints shall center over framing members.

(c) Spacing—Space boards 1/8 in. apart at all edges. At window and door frames bring Celotex in close contact with frame.

Note: Celotex boards are 1/8 in. less than full theoretical dimensions to allow for spacing as above on standard 16 in. framing.

(3d) Nails—

(1) Use standard 3/8 in. head, 1 1/2 in. galvanized roofing nails for 1/2 in. thick Celotex.

(2) Use 6d common nails for 3/4 and 1 in. thick Celotex.

(3e) Nailing—First nail Celotex to intermediate framing members and then nail the edges. On intermediate framing members, space nails 6 in. apart. At all edges space nails 3 in. apart and 3/8 in. away from the edge. Drive nails until the heads are slightly below the Celotex surface.

(3f) Covering Joints—With coarse sandpaper rub down an area from 4 in. to 6 in. wide at the joints. Strip these joints with galvanized annealed wire mesh, 12 or 16 to the inch, bonding the screening to the Celotex with bonding cement. The wire mesh should not be nailed or tacked in place except when starting a joint and occasionally on ceiling strips to hold in place while applying cement. Hold one end of strip while the bonding cement is applied to the surface of the wire and pressed through the mesh with a 4 in. painter's scraping knife. Spread the bonding cement beyond the edges of the screen for not less than 1 in. so that the edge of the wire cloth will not show through the plastic paint finish. In bonding the wire over the joints, press firmly against the Celotex and fill mesh well with the bonding cement applied in the consistency of putty. Apply, similarly, a strip of wire cloth bent around all corners and re-entrant angles.

SUPPLEMENTARY SPECIFICATIONS—

Application 4

Note: Provide for the following in other specification divisions when and where they apply.

(3A) Construction

Follow the standard recommendations of the Building Code Committee of the U. S. Department of Commerce for all wood framing.

(3B) Furring

Fur masonry walls with **(1x2 in.) (specify)** furring strips set 12 in. or 16 in. o.c. accurately shimmed to a true, level plane. Secure substantially to masonry.

(3C) Electric Outlets

Set electric outlet boxes to finish flush with the face of the Celotex Building Board.

(3D) Application of Plastic Paint and Wall Coverings

Note: See page 12 for separate specifications—"The Decoration of Celotex."

Celotex joint stripped with galvanized annealed wire mesh, and bonded with bonding cement.

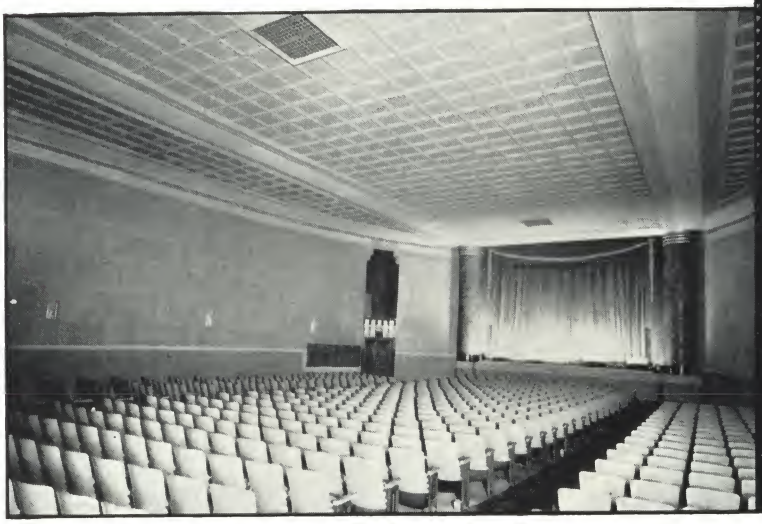
The interior of this church was modernized with Celotex Tile Board, for wainscoting, Celotex Finish Plank and grooved Celotex Building Board.

CELOTEX AS A MODERN INTERIOR FINISH

Celotex Building Board, distinctively grooved, used for walls and ceiling in this modern night club.

Modern living room with Celotex Finish Plank for walls and Celotex Building Board with Celotex Mouldings for ceiling.

Office finished with Celotex Building Board. Chromium mouldings and vertical pilasters the only decorations for the walls. Ceiling grooved in circular pattern.



Moving picture theatre has Celotex Tile Board on the walls and Celotex Building Board in a square pattern on the ceiling.

Celotex Building Board, Frieze and Mouldings are combined with unusual restraint in this modern bedroom.

APPLICATION No. 5—SPECIFICATIONS

Celotex Tile Board and Celotex Ornamental Tile — Interior Finish

(1) Base

Note: Select base best adapted to design and construction.

(1a) **Solid Wood Base**—Cover framing with 4 in., 6 in., or 8 in. wide, matched 25/32 in. thick, lumber to form a continuous level nailing base.

(1b) **Furring Strips**—Provide (1x2 *in.*) (*specify*) furring strips to conform accurately to the Celotex Tile design, 12 in. or 16 in. on centers. Shim where necessary to provide a true, level plane.

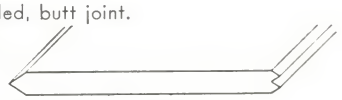
(1c) **Plaster Base**—Shall be tested level and solid.

(2) Materials

(2a) **Celotex Tile Board—**

Type A—All edges beveled, butt joint.

Type Double A—All edges beveled and interlocking; so tile are reversible.



Type B—All edges beveled, long edge ship-lapped.

Type C—Diagonal bevel joint.

Type D—Tongue and groove joint all edges, with bevel.

Sizes: 6x6 in., 6x12 in., 8x8 in., 8x16 in., 12x12 in., 12x24 in., 16x16 in., 24x24 in., 16x32 in., 18x32 in., 18x48 in., 24x48 in.

Thickness: 1/2 in., 3/4 in., or 1 in.

Note: Size, type of joint, and thickness to be indicated on details.

(2b) **Ornamental Celotex Tile**—Celotex Mouldings and Ornaments shall be in sizes and designs as indicated by number on the details.

Note: Ornamental tile of special design can be furnished where required.

(2c) The following (*wall*) (*and*) (*ceiling*) areas shall be covered:

Note: Here list and locate definitely the wall and ceiling areas to be covered. For the best results, accurate, detailed elevations of walls and plans of ceilings showing disposition, size, and thickness of units, including ornamental tile, should be included in the drawings and referred to here.

(3) Cutting and Fitting

All cutting and fitting shall be done in a neat, workmanlike manner. Where joints are not exposed, cutting may be done with a fine tooth saw, using a sharp blade with rapid strokes and a minimum of pressure. Where joints are exposed, cut with a sharp linoleum knife or special tool against a straight edge.

(4) Application

Note: May be by cementing and nailing over plaster base or by nailing over wood or plaster.

(4a) **General**

(1) **Celotex Tile Board** (*and Celotex Mouldings and Ornaments*) shall be laid in exact accordance with the detail drawings.

(2) Type B Celotex Tile Board shall be applied with long edges at right angles to furring strips.

(4b) **Spacing**—Bring units to a moderate contact. Do not force into place.

(4c) **Adhesive**—For cementing tile to plaster use Celotex Adhesive or other approved adhesives.

(4d) **Nails**—Use casing or finishing nails, 1 1/2 in. for 1/2 in. Celotex, 1 3/4 in. for 3/4 in. Celotex, and 2 in. for 1 in. Celotex.

Note: Zinc-coated nails are recommended where high humidities are prevalent.

(4e) **Cementing Over Plaster.**

Note: Advocated in better class of work.

Apply spots of adhesive to the back surface near each corner with additional spots approximately 10 in. apart on large tile. Exercise care to prevent adhesive from appearing on the exposed finished side. Press the tile into position, level and true, and nail tiles in position with one or two nails at each corner and additional nails as required for large tile. Set heads neatly below the Celotex surface.

Note: Use the above method only where the plaster is sound.

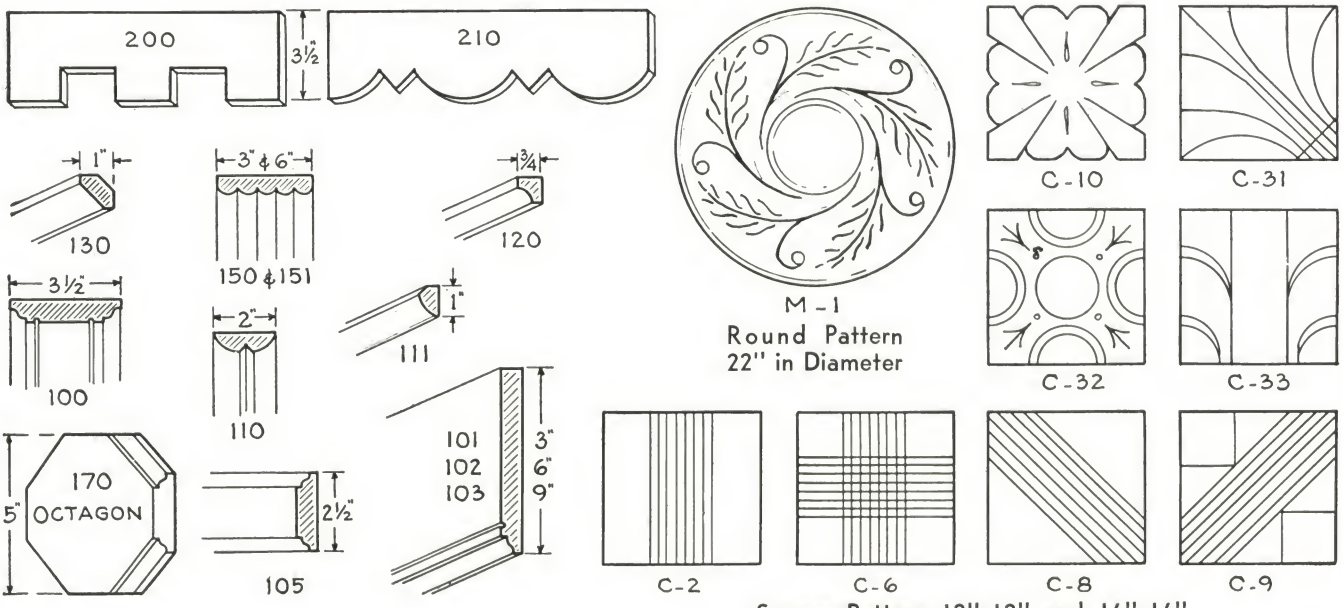
(4g) **Nailing Over Wood Backing (Continuous or Furring Strips)**—Space nails 6 in. apart wherever possible and at each corner, keeping back 3/8 in. from bevel. Drive nails at an angle and set flush or just below the surface of Celotex.

Adhesives

Celotex Plastic Adhesive—a **heavy bodied** waterproof adhesive for use in applying Celotex to rough or smooth surfaces, with or without supplementary nailing.

Celotex Alcohol Base Adhesive—a **light bodied** waterproof adhesive for use in applying Celotex to smooth surfaces in conjunction with supplementary nailing.

CELOTEX MOULDINGS AND ORNAMENTS



THE DECORATION OF CELOTEX

Plastic Paints, Staining, Painting, Papering, Etc.

Note: For complete information on the decoration of Celotex, Celotex Panel Board, and Celotex Hard Board, ask for Technical Notes 3, 8, 43 and 44.

(1) Water Paints

Calcimines and water paints should be applied directly to unsized Celotex though calcimine may also be applied to varnish-sized Celotex to facilitate removal by washing.

Water paints of the casein base class are increasing in popularity, because they are economical, they give good covering capacity and present a pleasing flat or semi-flat appearance. These paints are washable to a certain degree but not quite as much so as oil or varnish paints.

A single coat of good casein base water paints such as Sunflex, Rayolite, Luminall and Kameo will give very good coverage on Celotex, although two coats are recommended. Some of these paints are available tinted in a variety of attractive pastel shades. Others can be tinted from the white by the addition of dry colors in accordance with manufacturers' directions.

(2) Stains

Stains may be used where the natural color of the Celotex is to be modified without destroying the Celotex texture and where its acoustical absorption properties are of importance. While a variety of stains are available, glue stains give the best results on Celotex. A satisfactory glue stain may be made by dissolving 1/2 lb. of flake or ground glue in a gallon of boiling water. After the glue has been thoroughly dissolved, dry color is added in amounts depending on the depth of tone required. The dry colors are best added by mixing them with a small amount of water, stirring to a thin paste which is more easily taken up by the glue solution. Glue stains of this type must be used quite promptly after preparation. Preferably, they should be applied while they are still warm. Alcohol stains are not recommended —they dry too rapidly, leaving unavoidable brush marks.

(3) Oil or Varnish Paints

Celotex must be properly sized before application of Oil or Varnish Paints. A satisfactory glue size may be made by dissolving 1 1/2 lbs. of chip or flake glue to a gallon of boiling water. The following prepared oil or varnish sizes have the advantage that they may be obtained ready mixed and properly proportioned for direct application to Celotex.

NAME	MANUFACTURER	CITY
Primer for Celotex	Devoe & Raynolds	New York City
Compo Seal	E. I. DuPont de Nemours & Co.	Wilmington, Del.
Special Primer No. 44	The Glidden Company	Chicago, Ill.
Fill-Coat	Benjamin Moore & Co.	Chicago, Ill.
Peel-Kill Pigment Primer No. 7851	Marietta Paint & Varnish Co.	Marietta, Ohio
Nepto-Seal	The Lowe Brothers Co.	Chicago, Ill.
Plasco Primer-Sealer	Pittsburgh Plate Glass Co.	Pittsburgh, Pa.
Tri-Seal	Sherwin-Williams Co.	Cleveland, Ohio

The best results are obtained if the Celotex is sanded lightly after the size coat has dried thoroughly.

(4) Plastic Paint and Wall Coverings

Preparing Joints—Before applying plastic paint or wall coverings, reinforce all joints according to instructions in Application No. 3 —paragraph (3f) on Covering Joints, page 8.

Plastic Paints—The rough Celotex surface is recommended. Plastic paints are thick paints which can be textured by manipulating the brush or various tools to produce various textures and effects. They are divided into two groups—those prepared by the addition of water to a powder and those having a linseed oil base furnished prepared ready for use. Water base plastic paints (unless excessively alkaline) can be applied directly to unsized Celotex. Size Celotex for oil base plastic paints.

Wall Coverings—Use the smooth side of Celotex for applications of wall coverings. In addition to wall papers, canvas, fabrics such as Sanitas, leathers, and even thin plywoods and thin metal sheets may be applied. Wall paper may be applied over a lining paper if desired. If special requirements must be met, follow the manufacturer's standard recommended method of procedure.

(5) Stencil Decoration

Where a light touch of color is desired or where a means of accenting a design is sought, stencils are recommended. Border stencils are particularly attractive on Celotex interiors, and are approved by leading decorators.

Stencil designs may be cut in oil paper or metal. They are held in position by hand or by thumb tacks while the color is applied with a stiff stencil brush. Colors ground in Japan are recommended. The Japan color paint should be thinned to the desired consistency with a mixture of six parts turpentine, three parts linseed oil, one part Japan drier. Stencils may be obtained locally. A booklet of attractive stencil designs may be obtained from the Ladies' Home Journal, Philadelphia, Pa., for 10 cents, while the stencils themselves cost 15 cents each.

Celotex Building Board with chromium metal mouldings on walls. Celotex Tile Board with Celotex Ornaments on ceiling.

CELOTEX ROOF INSULATION

General Information and Suggestions

CELOTEX BRAND INSULATING CANE BOARD

Celotex Roof Insulation is especially designed for the insulation of roofs under built-up roofing, slate or tile roofs. It provides a highly desirable surface for mopping with asphalt or pitch. The firm support provided for the roof covering by Celotex Roof Insulation guards the finished roof surface from damage by mechanical abrasion or traffic.

In order to obtain the best results, the following supplementary directions covering work to be done by contractors other than the roofer should be considered in preparing the architect's specifications.

• SHEET METAL WORK

Roof insulation warrants the installation of the very best type of flashing construction. It is important that insulation be protected from the elements.

Where skylight curbs, monitor curbs, saw-tooth curbs or the like are to be flashed, it is important that a condensation drip pan flashing of metal be provided under the sill of the sash frame, in order to expel any moisture that may form on the back of the glass, thus protecting the roofing and the underlying layers of insulation.

At all exposed eaves it is important that metal eave strips be extended down over the edges of the roof boarding and securely fastened in place and provided with a drip that will expel all the drainage water.

Where hanging gutters are used, it is recommended that the gutter be furnished in a complete unit provided with roof flange, gravel stop (if roof surface is of gravel or slag), and the entire girth of the gutter formed in one continuous sheet of metal, properly hung with roof brackets.

All types of vents, outlets, drains, scuppers and the like, should be properly flashed and installed in a substantial, workmanlike manner.

Where large or heavy ventilators or standpipes or louvres are installed, they should be securely anchored to the underlying roof deck and should not depend for fastening upon the insulation.

• WOOD NAILING STRIPS

Where sheet metal flashing aprons and flanges of any nature are used, it will be found of advantage to apply a wood nailing strip the full thickness of the insulation, and 1 in. wider than the aprons to serve as a nailing base for such aprons and flanges. This nailing strip should be rigidly secured to the roof deck with nails, lag bolts, expansion bolts, or similar means of attachment.

• SLATE AND TILE WORK

Celotex Roof Insulation constitutes an exceptionally fine medium for the insulation of slate and tile roofs.

The application of the Celotex Roof Insulation can be handled very satisfactorily by the slate and tile contractor. Care should be exercised, however, in the application of both slate and tile to fasten the joints securely to the underlying roof deck.

The Application of Celotex Roof Insulation Board on the Naval Armory, Chicago, Illinois.

• CONCRETE WORK

Where a roof deck is of concrete, it is important that the roof be uniformly graded and that the surface be finished smooth and level and free from depressions. The concrete should be dry before the insulation layer is applied. It is also suggested that a nailing block be embedded in the concrete deck along all wall lines in order to permit nailing of the Celotex Roof Insulation at these points.

• CANT STRIPS

Wherever cant strips are provided along the wall line, the Celotex Roof Insulation should first be installed over the roof deck surface and the cant strips applied over the Celotex Roof Insulation layers. This also applies on sawtooth curbs, monitor curbs, and the like, where cant pieces are installed.

• IMPROVED APPLICATION SUGGESTIONS

Under conditions of unusual severity, and as an added point of quality in roof insulation work, the following suggestions are advanced.

Seal Course—A seal course consisting of one layer of 14-lb. saturated felt, lapped 2 in. and mopped to the deck (or mopped over rosin sized sheathing nailed to wood deck), prior to the application of the Roof Insulation, permits sealing in of the roof shortly after the roof deck is completed, thus protecting the interior of the building from the weather. By sealing the roof at this time, it is not necessary that the contractor immediately proceed with laying of the insulation and roofing, hence the roofing contractor may select weather most favorable to roofing work, and may be the last trade to work upon the roof, thereby preventing possible damage to the roofing from other trades.

Vapor Cut-off—When high humidities prevail under wood roof decks or steel decks, it is essential that a *vapor-proofing course* be applied over the decks prior to the application of the insulation. This course is heavier than the seal course mentioned above, and is described in detail under section of the Roof Insulation Specifications following.

Water Cut-off—Water cut-offs consist of strips of saturated roofing felt 8 to 10 in. wide, stuck in bitumen to the roof, carried over the edge of the insulation, and stuck to the top surface of the insulation. By installing these water cut-offs approximately 24 in. from and parallel to all vertical walls, such as parapets, pent-houses, skylight curbs, etc., and by dividing the balance of the roof area into rectangular areas approximately 30 ft. on a side, each such area of insulation is thus isolated from adjoining areas. This protection is particularly suggested where high humidities are constantly maintained beneath the deck.

CELOTEX ROOF INSULATION—SPECIFICATIONS

GENERAL PROVISIONS

(1) Insulating Material

Insulation shall be **(specify)** thick Celotex Roof Insulation (Ferox Treated) laid in **(one) (two)** layer**(s)**. Boards shall be 22 in. wide x 47 in. long. Celotex shall be kept dry before, during, and after application.

The following roof areas shall be insulated:

Note: List and locate. If more than one thickness of insulation is required on various roof areas, list and locate each separately.

(2) General

Only as much Celotex shall be laid over the roof area as can be covered by the finished roofing in any one day. Lay the Celotex in **(one) (two)** layer**(s)** over the entire roof area. Adjoining edges of the boards shall be brought to a moderate contact but shall not be forced into place. Where the roof meets vertical surfaces, such as parapets, penthouses, etc., the boards shall be cut in a neat, workmanlike manner to insure proper joining without forcing. Boards shall be laid in parallel courses with end joints in each course breaking with those of adjoining courses.

Where insulation is laid in two (2) layers, the boards of the second layer shall be laid parallel with those of the first layer, and the joints of the second layer shall break joints with those of the first layer.

APPLICATION No. 1 — OVER WOOD ROOF DECKS

Note: This specification applies to insulation against heat loss and to protect against top story excessive summer heat. Where prevention of condensation is required, use Application No. 2.

(3) Roof Deck

The surface of the roof deck shall be broomed clean, free from dirt, loose material, and thoroughly dry. All loose or springy boards shall be properly nailed before insulation is laid.

(4) Building Paper

Note: Use this clause only in case the insulation is laid in one layer.

The entire roof area shall be covered with two (2) plies (lapped half) rosin sized building paper or coated felt. Nail sufficiently to hold in place until the insulation is laid over it.

(5) Application of Insulation

(5a) Nails—Nails shall be of sufficient length to pass through the insulation and penetrate the wood roof deck at least 1 in.

(5b) Nailing—Space nails 12 in. apart o. c. Each board shall be secured in place by nailing along each edge and staggered along the longitudinal center line.

Nailing of two (2) layer insulation shall be through the second or top layer only.

APPLICATION No. 2 — OVER WOOD ROOF DECKS WHERE HIGH HUMIDITIES ARE MAINTAINED

Note: This specification applies where high humidities are maintained and prevention of condensation is necessary. Where this condition does not exist, use Application No. 1.

(6) Roof Deck

The surface of the roof deck shall be broomed clean, free from dirt, loose material, and thoroughly dry. All loose or springy boards shall be properly nailed before insulation is laid.

(7) Vapor Cut-off

Note: Include over entire roof area in conjunction with roof insulation on wood roof decks over rooms carrying high manufactured or incidental humidities. Select one of the two types specified below—select also, dependent on the type of finished roofing specified, pitch or asphalt.

(7a) Over the wood roof deck first lay a layer of coated (rosin sized) building paper lapped 2 in. at joints and nailed sufficiently to hold in position. Over the coated building paper lay two (2) plies (lapped half) of 14 lb. saturated roofing felt. Nail the back edge of each sheet with tin-capped, galvanized, barbed roofiing nails spaced 12 in. o.c. All laps shall be mopped back 12 in. with hot **(coal tar pitch) (asphalt)**. Do not mop over this membrane until just prior to the laying of insulation.

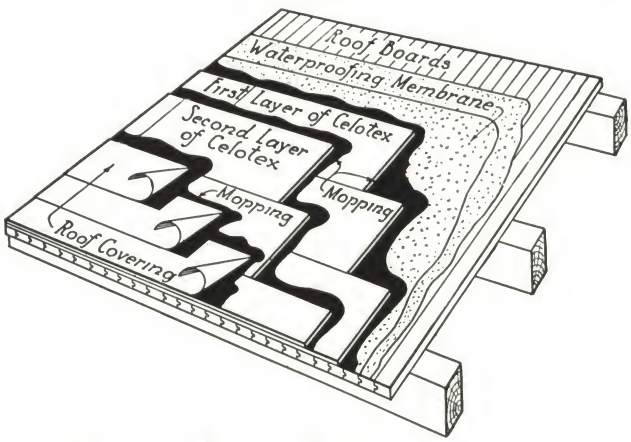
(7b) Over the wood roof deck lay two (2) plies (lapped half) of 34 lbs. per square prepared asphalt roofing having one side coated. Lay coated side down. Nail the back edge of each sheet with tin-capped, galvanized, barbed roofing nails spaced 12 in. o.c. All laps shall be mopped back 12 in. with hot asphalt. Do not mop over this membrane until just prior to the laying of insulation.

(7c) Wrap the vapor cut-off around edge and mop back 6 in. on top of insulation at walls, skylight curbs, and under monitor skylight sash.

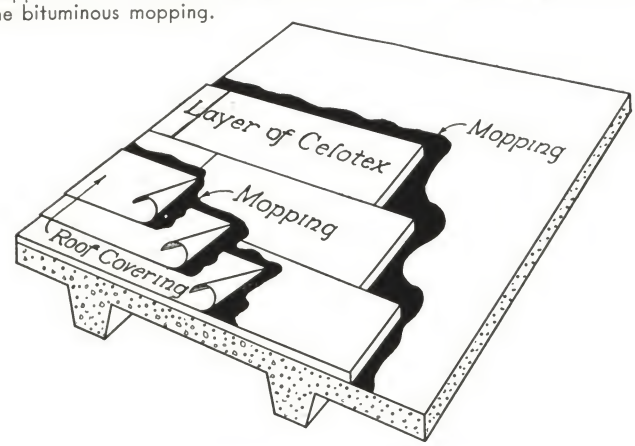
(8) Application of Insulation

Mop the exposed vapor cut-off felt liberally with hot **(coal tar pitch) (asphalt)**. Only sufficient area to provide complete embedment of each Celotex board shall be mopped at a time. Embed each board firmly in the bituminous mopping.

(8a) Two Layer Insulation—Mop the exposed surface of the first layer liberally with hot **(coal tar pitch) (asphalt)**. Only sufficient area to provide complete embedment of each Celotex board shall be mopped at a time. Embed each board of the second layer firmly in the bituminous mopping.



WOOD ROOF DECK



CONCRETE ROOF DECK

APPLICATION No. 3—OVER CONCRETE, GYPSUM, AND UNIT TILE

Note: Where high humidities are maintained use vapor cut-off as in paragraph (12).

(9) Roof Deck

(9a) General—The surface of the roof deck shall be reasonably smooth without depressions, broomed clean, free from dirt and loose material, and thoroughly dry.

(9b) Unit Tile Construction—The joints of all tiles shall be properly pointed up.

Note: Include (9b) where deck is of cement, gypsum, book or similar tile construction.

(10) Application of Insulation

(10a) Priming the Deck—Prime the deck with asphalt primer.

Note: Include priming if asphalt mopping and asphalt felt are used for seal course. If coal tar pitch and felt are used, no primer is necessary. Use a liberal coating of waterproof primer over gypsum decks.

(10b) Mopping the Deck—(*Mop the entire roof area*) (*Spot or strip mop the individual tiles or units*) with a coat of hot (*coal tar pitch*) (*asphalt*). Only sufficient area to provide complete embedment of each Celotex board shall be mopped at a time. Embed each board firmly in the bituminous mopping.

Note: If the deck is monolithic construction, (concrete, poured gypsum), the mopping shall be continuous. If the deck is of precast units (book tile, precast gypsum, concrete), coat the entire surface with a light and uniform mopping of asphalt; if coal tar pitch is used, spot or strip mop the individual units, keeping mopping back four inches from joints. Mop tile so as to prevent drippage.

(10c) Two Layer Insulation—Mop the exposed surface of the first layer liberally with hot (*coal tar pitch*) (*asphalt*). Only sufficient area to provide complete embedment of each Celotex board shall be mopped at a time. Embed each board of the second layer firmly in the bituminous mopping.

APPLICATION No. 4 — OVER STEEL ROOF DECKS

(11) Roof Deck

The steel deck shall be securely anchored to the roof purlins and all joints shall be made rigid.

(12) Vapor Cut-off

Note: Include this seal course if the rooms beneath the roof carry high manufactured or incidental humidities.

Mop the entire roof area with a coat of hot asphalt. Over the mopping, while hot, lay two plies, lapped half, of 14-lb. saturated roofing felt. Wrap vapor cut-off around edges of insulation and mop back 6 in. at walls, skylight curbs and under monitor skylight sash. Do not mop over this membrane until just prior to the laying of insulation.

(13) Application of Insulation

Mop the deck (vapor cut-off) with a liberal coat of hot asphalt. Only sufficient area to provide complete embedment of each Celotex board shall be mopped at a time. Embed each board firmly in the bituminous mopping.

(13a) Two Layer Insulation—Mop the exposed surface of the first layer liberally with hot asphalt. Only sufficient area to provide complete embedment of each Celotex board shall be mopped at a time. Embed each board of the second layer firmly in the bituminous mopping.

(13b) For Steep Decks—In addition to the mopping, each Celotex board shall be secured to the steel deck with three (3) bolts along the top.

APPLICATION No. 5 — OVER PITCHED WOOD OR NAILING CONCRETE — UNDER SLATE OR TILE ROOFING

(14) Roof Surface

The surface of the roof shall be broomed clean, free from dirt, loose material, and thoroughly dry.

(14a) All loose or springy boards shall be properly nailed before insulation is applied.

(14b) Nailing concrete shall be laid in accordance with the manufacturer's specifications.

(15) Application of Insulation

(15a) Nails—Nails shall be of sufficient length to pass through the insulation and penetrate the (*wood*) (*nailing concrete*) roof deck at least 1 in.

(15b) Nailing—Space nails 12 in. apart o.c. Each board shall be secured in place by nailing along each edge and staggered along the longitudinal center line.

(16) Felt

Apply slater's felt in the usual manner over Celotex.

(17) Furring Strips

Note: When the type roofing requires it, apply wood furring strips over the felt and insulation, properly spaced to take the slate or tile roofing. Nails shall be of sufficient length to pass through the insulation and penetrate the roof at least 1 in. Furring requirements are determined by type of roof deck and roofing.

CELOTEX FEROX INSULATING PROTECTION COURSE

• GENERAL

It is customary to protect bituminous floor waterproofing from damage by heavy traffic, and waterproofing on foundation walls from abrasion by back fill. Practically all construction specifications definitely require protection courses where waterproofing or dampproofing is used.

Celotex, Ferox treated against damage by dry rot and termites, meets the demand for an improved protection course, since it positively provides all of the factors requisite for thorough and permanent protection of the waterproofing treatment.

The Celotex Ferox Protection Course may be applied by the same contractor who applied the waterproofing treatment, thus avoiding divided responsibility. Its high insulating value serves to protect the underlying bitumen from the heat of the sun while work is in progress, thus preventing drippage and slipping of the membrane. Its light weight is an obvious advantage on vertical surfaces for it does not "drag" as do heavy materials, such as cement, mortar and mastic.

The application of the Celotex Ferox Insulating Protection Course immediately follows and becomes a part of the application of the waterproofing treatment. Subsequent operations can proceed immediately following application over waterproofing or dampproofing courses.

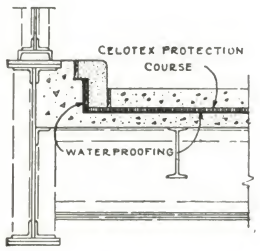
• APPLICATION

The ease with which Celotex Insulating Protection Courses can be applied assures good workmanship essential to satisfactory performance. Complicated operations are avoided, thus eliminating causes of damage to the waterproofing treatment.

Waterproofing or Dampproofing Treatment: Should be applied in the usual manner and in accord with established specifications. As the waterproofing treatment is given its final mopping, embed Celotex units promptly therein with joints broken and all edges in moderate contact. On vertical surfaces use a wooden mallet to procure overall contact—on horizontal surfaces press down on all units to insure intimate bond.

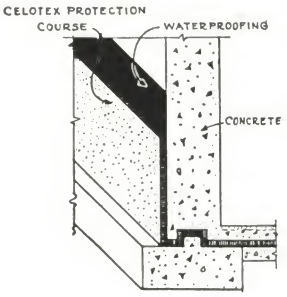
Mop Surfaces With Bitumen: After Celotex Insulating Protection Courses are in place, mop exposed surfaces with bitumen, filling all joints flush. Where floor areas are subject to sun or heat, dust the bitumen coating with sand or grits to prevent sticking under traffic, or preferably apply final bitumen coating just prior to laying of finished floor, if this is practical.

Back filling, laying of finished floor and other subsequent operations can immediately follow application of Celotex Insulating Protection Courses.



Above—Detail for Elevated Highways or Bridges. Celotex Ferox Insulating Protection Course over waterproofing.

Below—Detail for Outside Walls, Footings, etc. Celotex Ferox Insulating Protection Course over waterproofing. Outside application.



CELOTEX VAPORPROOFED LOW TEMPERATURE INSULATION

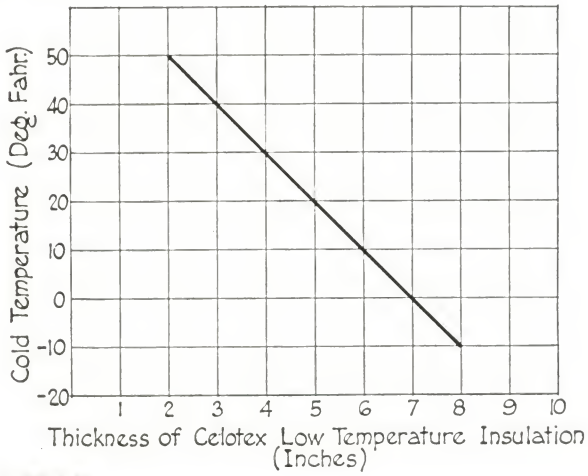
Protection against water vapor and moisture is essential in cold storage installations whether the material be fibrous, cellular, granular or of any other type of porosity. For years past efforts have been made to seal insulation during application with hot asphalt or plaster.

• FACTORY SEALED

Each unit of Celotex VLTI is **factory sealed** by a special process far more effective than hand-labor methods on the job — the installation receiving additional protection from the asphalt used in application. Furthermore, Celotex VLTI, like all Celotex Cane Fibre products is manufactured under the Ferox Process (patented) and therefore effectively resists damage by dry rot, fungus growth, and termites (White Ants).

IDAHO CANDY COMPANY, BOISE, IDAHO
Ice cream hardening room. Insulated with 8" Celotex VLTI applied in two 4" layers. Finished with asphalt emulsion and aluminum paint.

Because each block is isolated from every other block, should damage occur at a given point, moisture cannot be communicated throughout the insulated structure. With ordinary insulations, applied by usual methods, without the isolation of units, damage at a given point may diffuse water vapor and moisture throughout a considerable area. The high efficiency requirements of cold storage insulation are fully met by Celotex VLTI—this material having low conductivity, structural strength, resistance to damage and abuse and being readily applied. Its conductivity, based on Armour Institute tests, is 0.30 Btu. per hour, per square foot, per degree Fahrenheit, per inch thickness.



• SIZES

The standard size of Celotex VLTI is 18 in. x 36 in.; half-size blocks, 9 in. x 36 in. and 18 in. x 18 in., for breaking and staggering joints, are also available. Thicknesses: 1 in., 1½ in., 2 in., or any other multiple of ½ in.

METHODS OF APPLYING

CELOTEX VAPORPROOFED LOW TEMPERATURE INSULATION

The application of Celotex Vaporproofed Low Temperature Insulation follows generally established practices for applying cold storage insulations. Any exposed edges of blocks cut for fitting shall be resealed by (1) dipping in hot odorless asphalt, or (2) by means of a heavy coating of odorless asphalt plastic cement. Nails when required, shall be driven between joints of insulation blocks. Large-headed, galvanized or zinc-coated nails shall be used, driven through galvanized roofing caps when greater bearing surface seems desirable.

• CONCRETE CEILING

The surface of the ceiling shall be reasonably smooth, dry and clean, and shall be treated with an asphalt primer. Install nailing strips of the proper width and of the same full thickness as the first course of Celotex VLTI blocks. These nailing strips shall be spaced slightly more than 18 in. apart and shall be anchored to the concrete by means of expansion bolts. Stripping shall be treated with a wood preservative before applying.

The Celotex VLTI blocks shall be inserted between the wood stripping thus installed, a coating of asphalt being applied around all edges and on the upper surface.

If additional anchorage is necessary, this may be obtained by means of (1) a sufficient number of finishing nails started into the wood strips and bent over the face of the insulation blocks or (2) strap washers nailed to strips and extending over the face of insulation blocks to provide support.

If a second layer of Celotex VLTI blocks is to be installed, a coating of an adhesive asphalt shall be applied to one edge, one end and the upper surface of each of the blocks of the second layer, and the blocks applied directly against the first layer of insulation and the wood stripping, the joints of the second layer of insulation being run at right angles to the stripping. The second layer of blocks shall be additionally anchored by means of large-headed galvanized or zinc-coated nails driven between the joints of the second layer of blocks into the underlying wood stripping.

• FRAME WALLS AND CEILINGS

Celotex VLTI may be applied to frame walls by any of the following methods:

1. Two layers; first layer of Celotex VLTI blocks installed **against open studding** with stripping between blocks; second layer of blocks at right angles to first layer and held in place by means of large-headed nails driven between joints of second layer into wood strips. All joints of first and second layers shall be sealed with odorless asphalt.

2. One layer installed **against open studding** without stripping, blocks held in place by means of large-headed nails driven between joints of insulation into studding, all joints being sealed with odorless asphalt.

3. One or two layers installed **between studding** spaced the width or length of the Celotex VLTI blocks, all joints being sealed with odorless asphalt.

4. Two layers; first layer of blocks **between studding**, second layer **against face of studding** and held in place by means of large-headed nails driven between joints into studding. All joints shall be sealed with odorless asphalt.

5. Two layers, solid sheathing; **first layer between wood strips** and against sheathing; second layer at right angles to first layer and nailed between joints to wood strips, all joints being sealed with odorless asphalt.

6. One or two layers against solid sheathing **without stripping;** break joints; seal all joints with odorless asphalt; large-headed nails shall be driven between joints of both first and second layers into wood sheathing.

Similar methods may be used for applying insulation to frame ceilings.

• MASONRY WALLS

The surface of the walls shall be broomed clean of all dirt, dust and loose material. Any openings in the joints of the masonry and any cracks shall be properly pointed up. Rough, uneven walls shall be brought to a true, even flat surface by back-plastering. The surface of the walls shall be painted with two coats of an asphalt primer. The application of the Celotex VLTI blocks shall be started at the base of the wall or junction with the floor. Dip one flat side, one end and one edge of each insulation block in the molten asphalt, place the blocks in proper position against the wall, and press into place. (Note: Cold cut-back asphalt plastic cement may be used in place of the hot asphalt for bonding the insulation to the walls. Asphalt emulsions are not approved as adhesives). If additional positive anchorage is desirable, this may be obtained by means of nails driven through galvanized roofing washers through the vertical joints between the Celotex VLTI blocks into the wall. Blocks shall be laid in horizontal, staggered courses; proceed to the full height of the wall. The second course of blocks shall be applied in a manner similar to the first.

• SELF-SUSTAINING PARTITION

Erect temporary studding partition for staying first layer of insulation. The face of the studding against which the insulation is to be erected shall be level and shall provide a plane surface. The first layer of insulation blocks shall be applied in horizontal courses with staggered joints. The blocks shall be set up in hot asphalt applied to the edges. The second layer of blocks shall be applied against the first layer; dip one flat side, one end and one edge of each insulation block into the molten asphalt, place the block in proper position against the first layer of insulation and press into place. (Note: Cold, cut-back asphalt plastic cement may be used instead of hot asphalt). Break joints of the second layer of insulation with respect to the first layer; proceed to the full height of the partition. A Portland cement plaster finish shall be applied as directed under "Types of Finish" after which the temporary studding may be removed and a plaster or other type of finish applied to the other side of the partition.

• TYPES OF FINISH

The most common types of finish for Celotex VLTI are aluminum paint (applied directly to surface of blocks), asphalt emulsion (with or without aluminum finish), Celotex Panel Board, lumber and plaster. Where Portland cement plaster is applied to Celotex VLTI, a plaster bond shall be provided. On vertical surfaces, this may consist of grit or coarse sand imbedded in either hot asphalt or cold cut-back asphalt plastic cement applied to surface of blocks. Where Portland cement plaster is applied to ceilings, a metal lath reinforcing shall be used which may be attached to tie wires or to nailing strips between the Celotex VLTI blocks. Where a lumber finish is to be used, a wood nailing base, either over the blocks or between, shall be provided.

• CONCRETE FLOORS AND ROOFS

Floor shall be broomed clean, free from dirt and loose material and shall be reasonably smooth and dry. The floor shall be mopped with hot asphalt into which, while hot, shall be imbedded the first layer of Celotex VLTI blocks, with joints staggered. The surface of the first layer of blocks shall be mopped with hot asphalt into which, while hot, shall be imbedded the second layer of Celotex VLTI blocks, with joints offset with respect to the first layer. Over the surface of the second layer of blocks, apply a flood coat of hot asphalt. Provide concrete floor of the desired thickness in accordance with conventional practice.

Detailed specifications for any type of construction will be furnished upon request; also specifications for various types of walk-in coolers or refrigerators.

CANE TILE

Acousti-Celotex Cane Tile is a rigid block, perforated to increase and insure sound absorbing efficiency. The tile are finished complete. Efficiency of the installation is not dependent upon the precision of the installing mechanics.

MINERAL TILE

Acousti-Celotex Mineral Tile is a rigid block made of long fibred rock wool and perforated to increase and insure its sound absorbing efficiency. This product meets the requirements for an incombustible acoustical material.

TEN REASONS FOR SELECTING THIS PREFERRED SOUND ABSORBING MATERIAL

1. TYPES AND SIZES

Six different types of Acousti-Celotex, in standard sizes of 6x12 in., 12x12 in., and 12x24 in., cover the entire range of sound absorption needed for any type of acoustical job. On special order, other sizes for special requirements can be made.

2. INSTALLATION

Acousti-Celotex can be applied to any type of ceiling surface in new or old buildings.

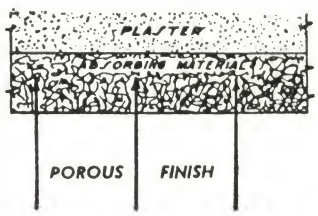
lions of square feet, in thousands of different jobs, have been installed. The material has been used repeatedly by the United States Government and by the largest firms in the country.

7. MAINTENANCE

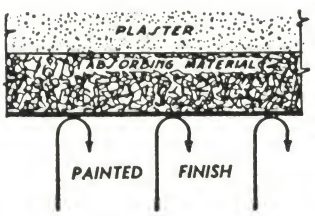
Acousti-Celotex is easily cleaned or painted without the necessity for special equipment. It is "maintenance foolproof."

The Paintability of ACOUSTI-CELOTEX gives you Permanent Sound Absorption

THE ACID TEST

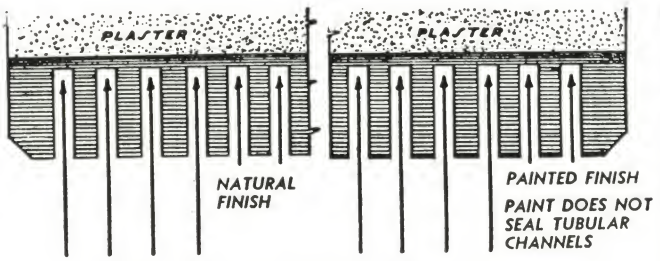


Sound penetrates material and is absorbed



Sound is repelled by painted impervious surface

Fig. 1. Effect of Paint on Porous Sound Absorbing Material



Sound easily enters perforations, painted or unpainted

Fig. 2. Effect of Paint on Acousti-Celotex

3. LIGHT REFLECTION

For the room with indirect lighting, a light-reflection value of up to .82 can be obtained with Acousti-Celotex.

4. DISTRIBUTION

Skilled contracting engineers in regional territories, with distribution facilities for the entire country, insure high-grade work.

5. PERMANENCE

Acousti-Celotex will last as long as the other materials in the building. **Because it is perforated, it can be repeatedly painted without destroying its acoustical efficiency. Special paints are not required.**

6. TIME TRIED

Acousti-Celotex has been used for over ten years. Mil-

8. DECORATION

Acousti-Celotex may be painted any color, or decorated, so that it will match any type of architectural interior.

9. THERMAL INSULATION

The thermal conductivity of Acousti-Celotex is approximately the same as Celotex insulation, 0.33 BTU. This becomes an added advantage of an Acousti-Celotex ceiling directly under a roof.

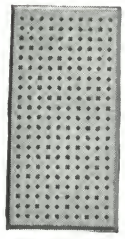
10. PREPAINTED ACOUSTI-CELOTEX

Prepainted Acousti-Celotex is now available. At the factory, a prepainted special hard finish surface is fabricated into Acousti-Celotex. Seventeen standard colors are available. This new "factory face" on Acousti-Celotex is a strong, durable, washable surface. It is the last word in acoustical material finish.

PAINTABLE PERMANENT
ACOUSTI-CELOTEX
TRADE MARK REGISTERED U. S. PATENT OFFICE

SIZES AND TYPES OF ACOUSTI-CELOTEX

CANE FIBRE TILE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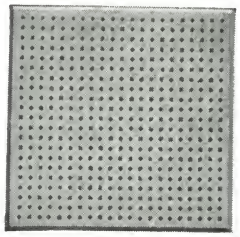
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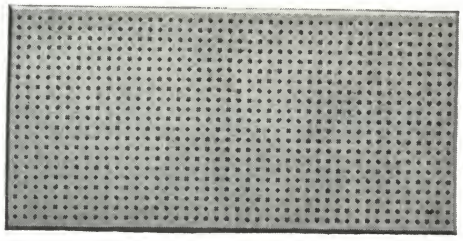
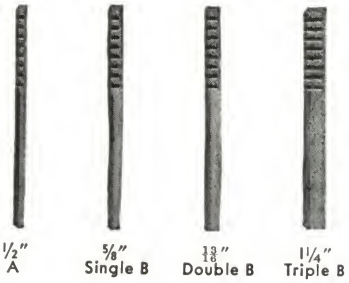
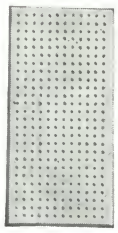
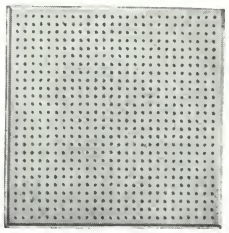
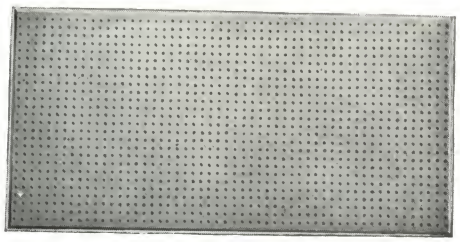

12"x24"


½" A | 5/8" Single B | 13/16" Double B | 1¼" Triple B

MINERAL TILE


6"x12"


12"x12"


12"x24"

5/8" MI | 1¼" M3

ABSORPTION COEFFICIENTS

The following values have been determined in the Official Laboratories of the Acoustical Materials Association:

TYPE		Coefficients 128	256	512	1024	2048	*Noise Reduction Coefficient	Wt. (lbs.) sq. ft.
Cane Fibre Tile								
Type A	Cemented to plaster....	.12	.24	.36	.49	.60	.40	.69
Single B	Cemented to plaster....	.12	.24	.47	.73	.78	.55	.72
Single B	On 1"x2" furring, 12" o.c.	.23	.60	.55	.69	.65	.60	.68
Single B	Cemented to plaster.... Painted glue size, 4 coats Wall-hide paint, brush applied.	.12	.24	.48	.71	.80	.55	.80
Double B	Cemented to plaster....	.14	.35	.63	.83	.90	.70	.95
Triple B	Cemented to plaster....	.19	.41	.91	.92	.92	.80	1.37
Mineral Tile								
MI	Cemented to plaster....	.17	.29	.58	.82	.82	.65	1.43
MI	Cemented to plaster.... Painted glue size, 4 coats Wall-hide paint, brush applied.	.14	.24	.58	.93	.83	.65	1.53
M3	Cemented to plaster.....	.37	.51	.88	.80	.82	.75	2.34

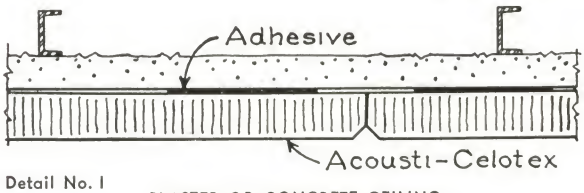
*The noise reduction coefficient is the average of the coefficients at frequencies from 256 to 2048 cycles inclusive, given to the nearest 5%. This average coefficient is recommended for use in comparing materials for noise quieting purposes as in offices, hospitals, banks, corridors, etc.

For auditorium treatment, attention should be directed to the coefficients at 512 cycles and other frequencies.

LIGHT REFLECTION

Material	Paint	Reflection in per cent	Authority
Cane Fibre Tile	White, lead and oil	68.0	National Lead Co.
Cane Fibre Tile	White, 2 coats Sunflex	77.0	Curtis Lighting, Inc.
Cane Fibre Tile	Cream, 2 coats lead and oil	65.0	Curtis Lighting, Inc.
Mineral Tile	White, 1 coat Sunflex	82.0	Curtis Lighting, Inc.

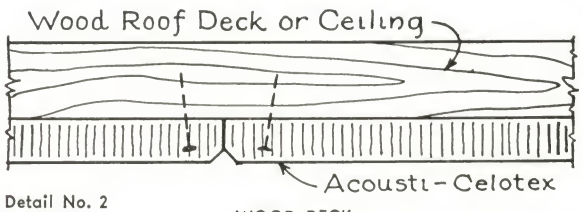
CONSTRUCTION DETAILS



Detail No. 1

PLASTER OR CONCRETE CEILING

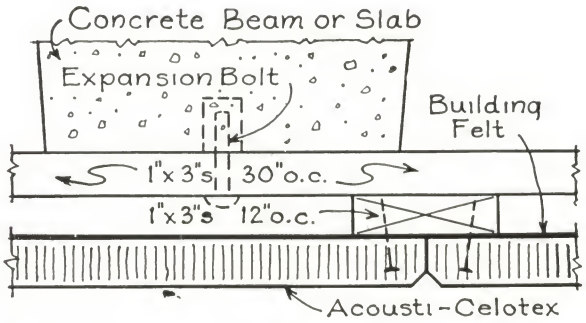
On plaster ceilings Acousti-Celotex is usually cemented (using an approved adhesive) and nailed directly to the plaster. If desired, Acousti-Celotex may be applied with a heavy bodied adhesive alone to plaster or flat concrete surfaces.



Detail No. 2

WOOD DECK

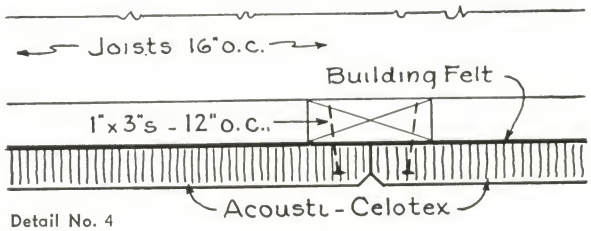
On ceilings of wood, as churches or gymnasiums having an exposed wood roof deck, Acousti-Celotex is nailed directly to deck.



Detail No. 3

WOOD FURRING

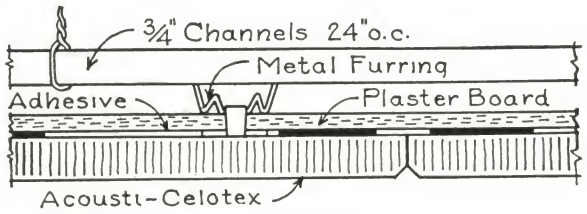
On concrete surfaces or surfaces where it is desired to furr down, 1x3-in. wood furring strips may be attached to the concrete with expansion plugs, and Acousti-Celotex is nailed to the furring strips. Ordinarily, a first course of strips 30 in. o. c. is used, to which is nailed a second course 12 in. o. c. to receive 12x12-in. tiles. A backing of building felt is used directly behind Acousti-Celotex to prevent "breathing" between joints.



Detail No. 4

WOOD FURRING ON JOISTS

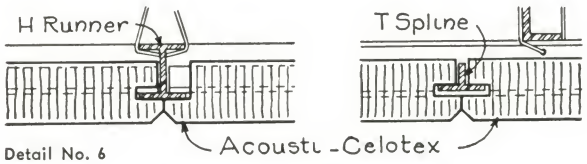
Acousti-Celotex may be applied over exposed wood joists by means of furring strip as shown.



Detail No. 5

PLASTER BOARD CEILING

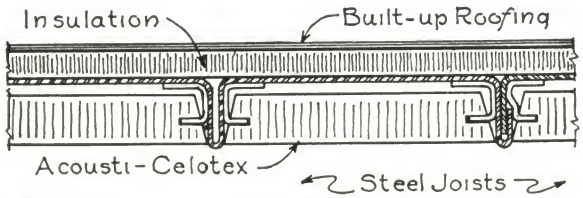
Where a suspended ceiling of lighter and cheaper construction than metal lath and plaster is desired. Acousti-Celotex may be directly fastened to gypsum board held by special suspended plaster board systems.



Detail No. 6

METAL SUSPENSION

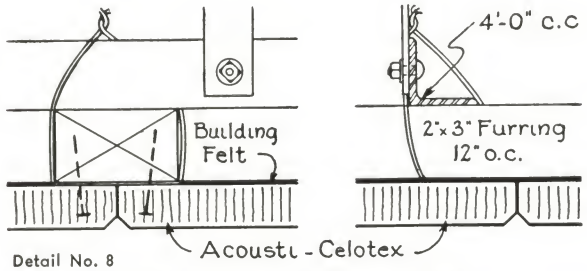
Where it is desired to use the Acousti-Celotex as the suspended ceiling by itself, the Celotex metal suspension system may be used, as shown above. Details of this type of construction are available on request.



Detail No. 7

STEEL DECK

Acousti-Celotex Cane Fibre Tile may also be used in combination with steel roof decks to give a combined acoustical ceiling and steel roof deck having high heat insulating qualities. The Acousti-Celotex has the same heat insulating value as an equal thickness of Celotex. The Acousti-Celotex is cut to fit the steel deck, and fabricated before erection.

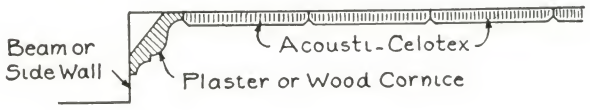


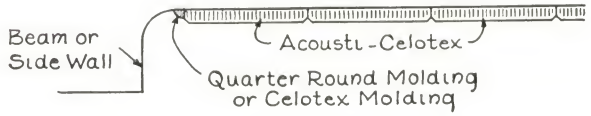
Detail No. 8

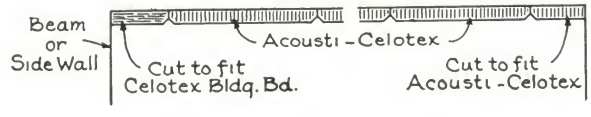
WOOD FURRING ON METAL CHANNEL

Acousti-Celotex may be used as a suspended ceiling by itself in conjunction with wood and metal furring erected as shown.

Suggested Methods of Finishing Acousti-Celotex Ceilings at Vertical Breaks—Walls or Beams







PAINTABLE PERMANENT
ACOUSTI-CELOTEX
TRADE MARK REGISTERED U. S. PATENT OFFICE

PREPAINTED ACOUSTI-CELOTEX

In response to the demand, Prepainted Acousti-Celotex is now available!

A special process is used in applying the base for the prepainting. This base "under coater" is a very smooth, strong and durable surface. Standard flat oil paints (enamel if desired) are then applied to the base finish. The finished surface has been described as "smooth as finished wood trim." It is a truly washable surface. Any one of seventeen different colors may be selected from the color chart on prepainted Acousti-Celotex.

This new "factory face" on Acousti-Celotex, is a combination of paint products long recognized in the painting industry as **permanent, washable,** and **durable.** The special smoothing process employed in applying these products enhances their established value.

As is the case with standard Acousti-Celotex, prepainted Acousti-Celotex may be re-painted any number of times after it is installed and there is no loss in sound absorption.

There is no "or equal" to Acousti-Celotex in the matter of painting, for it has proven in the laboratory and in the field that it is the only material in the acoustical field which can be painted with as much paint—oil paints too—or as many times and still not lose its absorptivity or acoustical value.

SPECIFICATIONS — Acoustical Treatment

The following points should be included and adequately covered in the acoustical specifications, to insure clarity and fidelity by the acoustical bidders.

● SCOPE OF WORK

The general standard paragraph for this heading usually refers to A. I. A. standard practice for sub-contractors, and in addition carries a sentence somewhat as follows: "Work included under this heading consists of furnishing of all materials and equipment, and performing all labor necessary to complete the installation of acoustical tile in the (name rooms and areas in rooms to be treated) as designated on the plans and called for in the schedule of surfaces, all in the manner herein specified."

● METHOD OF INSTALLATION

The surfaces to which the acoustical contractor must apply the acoustical tile should be described for they are a controlling factor in specifying the method of installing the acoustical tile. (Note: See construction details No. 1 to No. 8 for methods of installing Acousti-Celotex to the various receiving surfaces.) The most popular method of installation is described in construction detail No. 1. The descriptions under each of the construction details may well serve as a guide in specifying the method of installation of Acousti-Celotex for the respective types of construction.

● MATERIAL

The specification of the acoustical material or materials acceptable may be accomplished in more than one way, of course. In this connection, there are two important factors:

(a) **The sound-absorbing coefficient of the material,** which may be designated by specifying the 512 cycle value desired; or, on noise quieting problems such as offices, hospital and school corridors, etc., by specifying the "noise reduction" coefficient desired. (Note: See technical page for the sound-absorption values of the six different types of Acousti-Celotex.) Values as given by the Acoustical Materials Association are recognized as standard in the acoustical industry.

(b) **The practicability of the material:** that is, does the material lend itself to practical installation methods and is the material, above all things, a product that can be maintained over a period of years without having maintenance procedure reduce the original sound-absorbing value of the product. The acoustical ceiling in a building will be repainted as frequently as the other interior surfaces, so the practical acoustical material is the one which will receive repeated painting without losing its absorptivity. The architect is assured of this protection for himself and his client if this sentence is inserted: "The acoustical material shall be of such a nature that it can be brush-painted with at least a prime coat and four coats of oil paint, after installation, without reduction in acoustical value. Bidders must submit laboratory test data and a list of at least ten installations substantiating this characteristic in the product they propose to furnish." It is well to keep in mind, that a factory prepainted product does not necessarily mean that such a product will stand painting after installation.

● PATTERNS

If a tile pattern is desired, the description of the pattern should be given as well as the sizes of the tiles to be used.

● SCAFFOLDING

The usual order is to specify that scaffolding will be furnished by the general contractor.

● PAINTING

Painting of the acoustical material may be included in the Painting Specification, or factory prepainted material may be specified.

● SAMPLES

The following standard paragraph is suggested:

"Samples of the proposed acoustical material, finished and/or painted, as specified under 'painting,' with test data, must be submitted to the Architect for approval before award by the General Contractor."

SHORT SPECIFICATION

Many times a short form of specification is advisable. **Example:** "The acoustical contractor shall furnish and install Type Single B Acousti-Celotex (Note: See page (number) for different types of Acousti-Celotex) cemented to the brown coat of plaster. The size of the tile shall be 12 x 12 in., installed in a broken joint pattern."

(The Celotex Corporation and the Acousti-Celotex Contracting Engineer will gladly furnish additional information on specific jobs at specification writing time.)

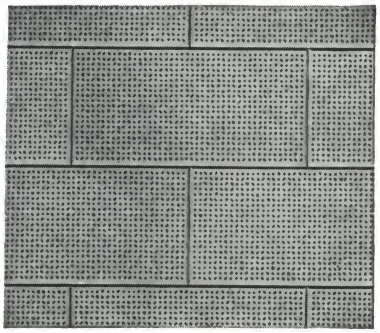
Attention!

We expected to announce in this issue of Sweet's, further and additional improvements in Acousti-Celotex. The research and field tests have not quite been completed on these new developments, however.

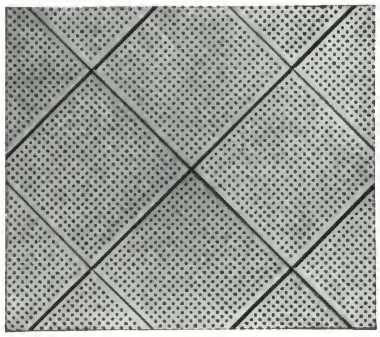
This new data and information will be available early in 1936. Upon release, it will be furnished gladly by

ACOUSTI-CELOTEX CONTRACTING ENGINEERS
or THE CELOTEX CORPORATION

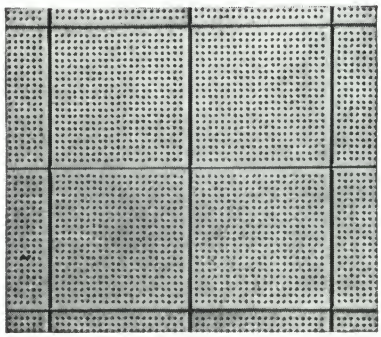
Seven Typical Patterns in which Acousti-Celotex May Be Applied



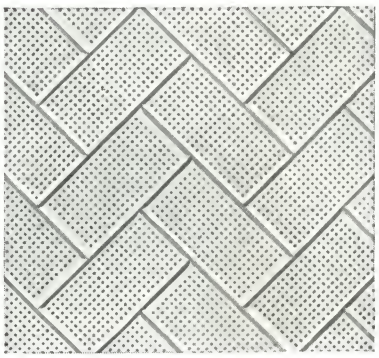
ASHLAR



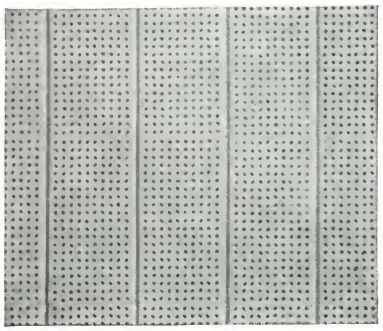
DIAMOND



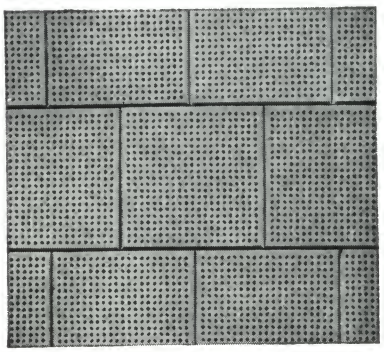
SQUARE



HERRINGBONE



PLANK



BROKEN JOINT

● APPLICATION TO CURVED SURFACES

The sizes of Acousti-Celotex tile facilitate installation on curved surfaces, as arches and groined ceilings.

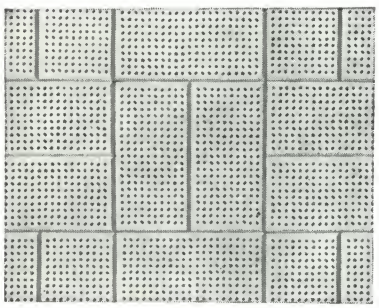
The tile may be kerfed on the back to take sharp curves, down to a radius of approximately 6 ft.

● DISTRIBUTION

Celotex Acoustical Products are sold by carefully selected Acousti-Celotex Contracting Engineers. With their organizations of competent acoustical engineers, salesmen, and application mechanics in each territory, the most efficient and economical use of the products is assured.

● TIME TRIED

Acousti-Celotex is **not** a new material or an **experiment. Millions** of square feet have been installed in almost every conceivable type of room, in all parts of the world and under extreme conditions of every character. An **architect** is **assured** of **satisfactory** results in specifying Acousti-Celotex, as it has successfully stood the test of time, and the experience gained by The Celotex Corporation enables it to completely handle acoustical problems of any character.



BASKET WEAVE

FEROX PROCESS
(Patented)

By a new exclusive process, all Acousti-Celotex Cane Fibre Tile is Ferox treated. The Ferox process is a proven method whereby the individual fibres, in their wet state and before their formation into tile, are coated with a chemical complex which is toxic to fungi, termites, (white ants) and other cellulose destroying organisms. The physical properties of the Celotex are in no way affected and the material is made permanently resistant to decay.

Acousti-Celotex is **not sold indiscriminately,** but only by authorized Acousti-Celotex Contracting Engineers who must maintain thoroughly competent and responsible organizations.

There are no "yearly models" of Acousti-Celotex. Because of the patented perforations—size, depth and number—Acousti-Celotex is a proven form of permanent sound absorption. Painting, regardless of the type of paint used, does not reduce its efficiency.

CELOTEX

BRAND

INSULATING CANE BOARD

REG U S PAT OFF

BUILDS · INSULATES · DECORATES

SUBDUES NOISE

CERTAIN-TEED PRODUCTS CORPORATION

Insulating Materials

GENERAL OFFICES
100 East 42nd Street, NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster Pages
For Our Other Products, see File Index

BEAVER 100% CANE STRUCTURAL INSULATION

Beaver Structural Insulating Products are manufactured solely from Hawaiian sugar cane fiber. No filler or binder is introduced into the products, their high insulating value, moisture resistance, strength and rigidity being the result of exacting chemical and mechanical processes during manufacture and the use of the most modern and highly developed plant equipment available. Beaver Insulating Products are *termite proof, rot proof* and *vermin proof*. All Beaver Insulating Products are packaged with a protective covering to insure their delivery on the job in undamaged condition.

Standard Beaver Insulating Board, from which such specialized products as Insulating Lath, Decorative Tile and Planking, and Roof Insulation are re-manufactured, weighs 675 lbs. per 1000 sq ft.—half-inch thick basis. Coefficient of thermal conductivity .325 per hour, per sq. ft. per degree Fahrenheit difference in temperature per inch of thickness. Modulus of rupture over 500; tensile strength over 300 lbs. per sq. in. Beaver Insulating Lath, due to its surface texture and homogeneous character up to one inch in thickness, has the unusually high bond of over 1600 lbs. per sq. ft. with hard wall plaster.

Beaver Insulating Board

Beaver Insulating Board is suitable for interior finish in many types of construction. It may be grooved and beveled. It offers a perfect surface for paint which spreads readily and smoothly on it, making possible unlimited decorative treatments.

Standard Sizes—4x4 ft.; 4x5 ft.: 4x6 ft.; 4x7 ft.; 4x8 ft.; 4x8½ ft.; 4x9 ft.; 4x9½ ft.; 4x10 ft.; 4x12 ft. (Other widths and lengths available from plant on special order at slightly increased price.)

Thicknesses—½, ¾ and 1 in. (Homogeneous.)

Beaver Insulating Key Lap Lath

Shiplapped and "slotted" with a deep, straight side, easy-to-fill, mechanical key on long edges and short edges are beveled, permitting strengthening of plaster at all joints to insure against cracks.

Standard Sizes—18x48 in., 16x32 in.

Thicknesses—½, ¾ and 1 in. (Homogeneous.)

Beaver Insulating Tile

(for interior decoration)

Selected for uniformity of neutral buff tone and perfection of surface texture. All edges beveled and shiplapped.

Standard Sizes—(Large) 16x32 in.; 18x48 in.; (Small) 6x6 in.; 6x12 in.; 6x18 in.; 12x12 in.; 12x24 in.; 16x16 in. and 24x24 in.

Thicknesses—½, ¾ and 1 in.

Beaver Insulating Plank

(for interior decoration)

Selected for uniform surface texture and color. Long edges shiplapped, beveled and beaded.

Standard Sizes—6 in. x 8 ft.; 6 in. x 10 ft.; 6 in. x 12 ft.; 8 in. x 8 ft.; 8 in. x 10 ft.; 8 in. x 12 ft.; 10 in. x 8 ft.; 10 in. x 10 ft.; 10 in. x 12 ft.; 12 in. x 8 ft.; 12 in. x 10 ft.; 12 in. x 12 ft.; 16 in. x 8 ft.; 16 in. x 10 ft.; 16 in. x 12 ft.

Thickness—½ in.

Beaver Batten Strips

From selected stock. Beveled and grooved.

Sizes—2½ in. x 8 ft.; 2½ in. x 10 ft.

Beaver Roof Insulation

All edges square and true unless otherwise specified. One-inch thickness is furnished solid or laminated at manufacturer's option. All thicknesses over 1 in. are laminated or stapled, as required. Homogeneous or laminated Beaver Roof Insulation will be furnished with edges off-set on special order.

Standard Sizes—22x46 in.; 24x48 in.

Thicknesses—½, 1, 1½, 2, 2½ and 3 in.

Beaver Insulating Blocks (Unwrapped)

For moderate temperature work or cold storage construction when dipped in, or mopped with, hot asphalt. All edges square. Thicknesses greater than 1-in. laminated with waterproof adhesive.

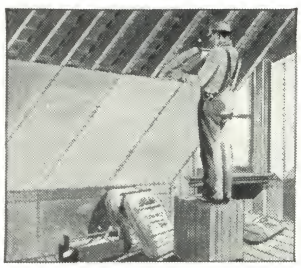
Standard Sizes—18x36 in.; 24x48 in.

Thicknesses—1, 1½, 2, 2½ and 3 in.

DRY THERMOCRETE

Superior Insulation, Easily Applied

Dry Thermocrete is a light, fluffy gypsum material possessing the natural insulating properties of gypsum, plus bulk thickness and millions of insulating dead air cells are assured by its fluffy consistency. It is simply poured dry from the bag between inner and outer walls and floors, or spread between attic joists. Gypsum being fire resistant, means that Dry Thermocrete acts as a fire-stop between wood members as well as an efficient insulator when poured between the walls of any building.



Covering Capacity—Dry Thermocrete comes in 50-lb. bags, convenient for handling. Figures for any thickness may be obtained by dividing the specified number of inches into the figures shown below.

COVERING CAPACITY OF DRY THERMOCRETE

Where used	Sq. ft., 1 in. thick		Cu. ft.	
	One 50-lb. bag	One ton	In one 50-lb. bag	In one ton
In walls	25	1000	2	83
In ceilings and floors	30	1200	2½	100

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices, New York, N. Y.

MEMORANDA

FIR-TEX
SUPER INSULATION

FIR-TEX INSULATING BOARD CO.
ST. HELENS, OREGON

•

DANT & RUSSELL, INC.
PORTLAND, OREGON
GENERAL DISTRIBUTORS

FIR-TEX INSULATING BOARD COMPANY, ST. HELENS, OREGON

THE COMPANY AND THE PRODUCT—

THE FIR-TEX INSULATING BOARD COMPANY was organized in 1929, by a group of Western business men, consisting of the leaders in finance and industry. The plant was built at St. Helens, Oregon (thirty miles west of Portland), at a cost of approximately two and one-half million dollars. This plant of concrete and steel is of the very latest design and covers approximately six and one-quarter acres. The machinery was especially designed for the manufacture of FIR-TEX. The plant is located on the Columbia River, in the heart of an unlimited supply of raw material. Shipments can be made via steamer to all parts of the world and over six different railroads connecting the Northwest country.

Fir-Tex Insulating Board Co.

St. Helens, Ore.

GENERAL DISTRIBUTORS

DANT & RUSSELL, INC., PORTLAND, ORE.

SALES REPRESENTATIVES

Consult your Telephone Directory for local Fir-Tex dealers

Doneghy & Spink Co.,
City Bank Building,
Kansas City, Missouri

W. C. Ashenfelter & Son, Inc.,
1338-1344 No. Delaware Avenue,
Philadelphia, Pennsylvania

McCormick Supply Company,
461 Market Street,
San Francisco, California

Mr. J. E. Schwarz,
4215 Lindell Boulevard,
St. Louis, Missouri

Fir-Tex of Illinois,
333 No. Michigan Avenue
Chicago, Illinois

Fir-Tex of Colorado,
412-413 Denham Building,
Denver, Colorado

Fir-Tex of Iowa-Nebraska,
368 Saunders-Kennedy Building,
Omaha, Nebraska

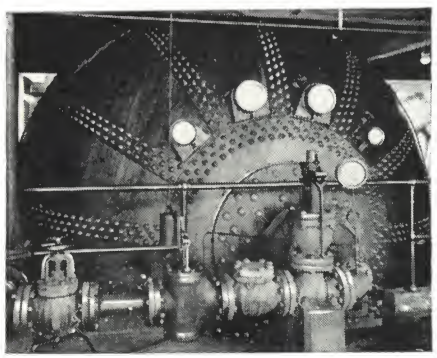
Fir-Tex of Minnesota,
703 Third Avenue, South,
Minneapolis, Minnesota

Fir-Tex of New Jersey,
214 No. Clinton Street,
East Orange, New Jersey.
Telephone: Orange 3-4025

Fir-Tex of Southern California,
633 Petroleum Securities Building,
Los Angeles, California

Fir-Tex of Washington, Inc.,
1321 Smith Tower,
Seattle, Washington

Fir-Tex of Maryland,
506 So. Central Avenue,
Baltimore, Maryland



One of the Mammoth "Digesters" in Which the Douglas Fir Chips Are Softened so Their Minute, Long Fibres Can Be Separated

FIR-TEX

AN UNLAMINATED WOOD FIBRE INSULATION BOARD

LONG ago, specialists in the field of insulation realized that they must find some natural material from which a super-insulation product could be made.

The search was for an unlimited supply of a cheap, raw material from which could be economically manufactured, *without lamination,* a semi-rigid, super-insulator embodying maximum thermal and sound-deadening qualities.

After years of research, this basic material was found in the wood fibre of the famous Douglas fir trees, with the waste of the Pacific Northwest's lumber mills an inexhaustible source of supply.

The Accompanying Microscopic View of Fir-Tex, Magnified Ten Times, Shows the Vast Number of Air Voids of This Super-insulation

Extensive experiments demonstrated that this tough, elastic wood fibre, properly interlaced and treated according to a special formula, produced the desired super-insulation.

The process used in producing these fibres from the Douglas fir is by shredding the chips produced by the Northwest lumber mills with powerful shredders. The resulting fibres are formed by special treatment into a homogeneous board containing millions of air voids. This method has long been recognized by scientists as being the most efficient way to produce a super-insulating board.

At various stages during the entire process of manufacture, the material is subjected to the most severe laboratory tests to assure a uniform product.

Fir-Tex Testing and Research Laboratory Where Fir-Tex Samples Are Constantly Tested for Heat Insulation and Sound Absorption Qualities

NOT LAMINATED

Special attention is called to the fact that Fir-Tex is *not laminated.* This means that the heat and sound insulation efficiency of Fir-Tex reaches a degree heretofore unequaled in semi-rigid insulation. Fir-Tex super-insulation is made in continuous sheets 12 ft. wide, ½ *in. thick and thicker.* Before the manufacture of Fir-Tex, most fibrous insulators over half an inch in thickness had to be bonded together in layers, with a resulting lowering in insulation efficiency.

The significance of this new thick product in protecting American homes and American industries is summarized by government insulation experts:

"From the point of view of insulation only, the most important question is the thickness of insulating material to be applied, rather than what material to select, provided the choice is restricted to the class of cellular or fibrous materials. No known material in a very thin layer can be expected to provide an appreciable amount of insulation. If a layer of insulating material is added to a wall, the insulating value of the wall will be increased by an amount equal to the insulating value of the layer of material added. The thicker the layer, the greater will be the insulating value of the resulting wall."—Department of Commerce Bureau of Standards — Circular 227.

PROPERTIES OF FIR-TEX

The natural cellular construction of the Fir-Tex fibres, after treatment by the special process used in manufacturing Fir-Tex, is responsible for the unusual properties and characteristics of this super-insulation which are described below. The manufacturing process, so carefully controlled by strict laboratory tests, further contributes to these properties and makes Fir-Tex ideally suited for any use or purpose requiring a board of this type.

In any product which is used primarily for insulation purposes the thermal-conductivity is naturally the most important property. However, in weighing the merits of various insulation many other characteristics should also be given serious consideration as they will have a most important part in the satisfactory service secured from such products. For this reason we are glad to be able to present on this and the facing page, results of tests, by impartial recognized authorities, of the various properties of Fir-Tex Super-Insulation.

THERMAL-CONDUCTIVITY

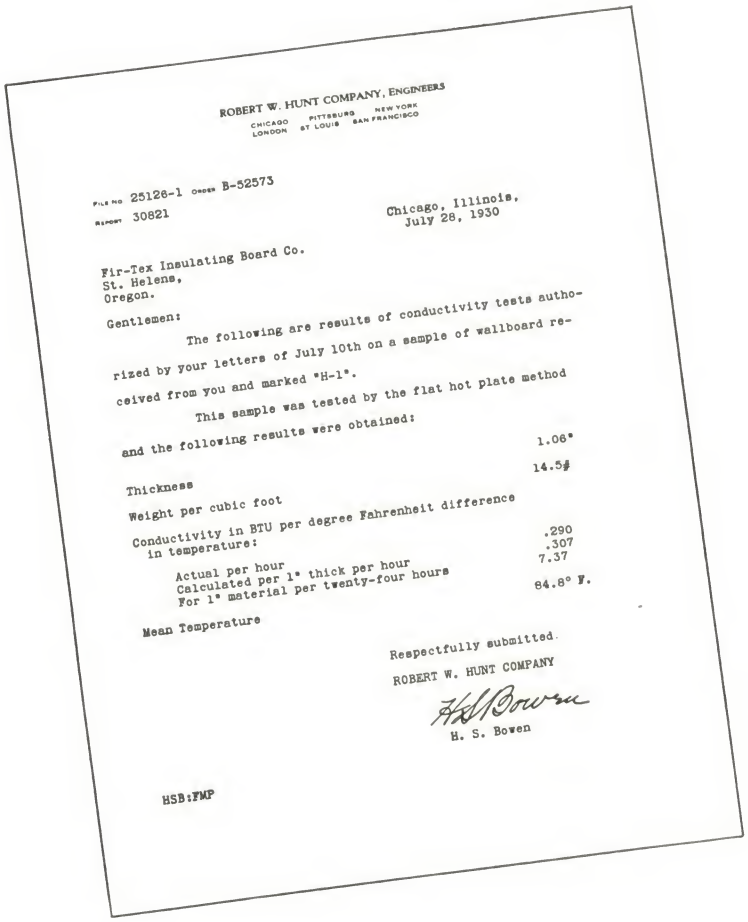
The thermal conductivity coefficient of Fir-Tex is shown in the accompanying letter from Robert W. Hunt Company, Engineers. It will be noted that the calculated conductivity per degree F., per inch, per hour is .307 which is approximately 10% greater insulation value than many other insulation boards intended for the same uses.

Heat conductance tests by J. C. Peebles at the Armour Institute of Technology on Fir-Tex showed a conductance in B.t.u.'s per hour, of .31 with a density of 14.7 lbs. per cubic foot.

Dr. Henry Arnstein of Philadelphia conducted various comparative tests between Fir-Tex and Cork and states in part in his report that:

"From this test it is evident that Fir-Tex has the same insulation ability as cork at 50° C. (120° F.)

Above 50° C. and below 50° C. there is a decided improvement noted by the use of Fir-Tex when compared with Cork."



ROBERT W. HUNT COMPANY, ENGINEERS
CHICAGO PITTSBURG NEW YORK
LONDON ST LOUIS SAN FRANCISCO

FILE NO. 25126-1 ORDER B-52573
REPORT 30821

Chicago, Illinois,
July 28, 1930

Fir-Tex Insulating Board Co.
St. Helens,
Oregon.

Gentlemen:

The following are results of conductivity tests authorized by your letters of July 10th on a sample of wallboard received from you and marked "H-1".

This sample was tested by the flat hot plate method and the following results were obtained:

Thickness	1.06"
Weight per cubic foot	14.5#
Conductivity in BTU per degree Fahrenheit difference in temperature:	
Actual per hour	.290
Calculated per 1" thick per hour	.307
For 1" material per twenty-four hours	7.37
Mean Temperature	84.8° F.

Respectfully submitted.
ROBERT W. HUNT COMPANY
H. S. Bowen

HSB:FMP

Mr. E. H. Adams of the Purchasing Department of General Electric Company reported on December 15, 1930, that tests on the most recent samples of Fir-Tex submitted showed a conductivity of .281 and .307 B.t.u.'s respectively per degree F., per square foot, per inch per hour.

The foregoing represent only a few of the many tests which have demonstrated the low thermal conductivity of Fir-Tex and additional data may be secured from the Company if desired.

Probably the most satisfactory way to judge the performance of any material is by the comments of large users. Our files contain many letters from railroads and industrial plants as well as city departments testifying to the successful results obtained from the use of Fir-Tex for practically every insulating purpose from the construction of refrigerator cars to the insulation of a skating rink slab. We will be glad to send copies of these letters upon request.

SOUND ABSORPTION AND SOUND TRANSMISSION

The valuable properties of Fir-Tex which dictate its use wherever it may be desirable to deaden sound are its excellent sound absorptive and low sound transmission qualities. To shut out the rumbling of street traffic, to quiet office or plant noise and for hundreds of other uses Fir-Tex Super-Insulation provides the proper material.

The tables below present the results of sound absorptive and sound transmission tests on Fir-Tex Decorated Board and Fir-Tex Acoustical Tile by Vern O. Knudsen, Ph.D., Consultant on Acoustics.

Complete details of these tests will be furnished on request.

SOUND ABSORPTION TESTS

Coefficient of Sound Absorption, Fir-Tex Decorated Board, 1 In. Thick

Cycles	128	256	512	1024	2048	4096
Coefficient	.31	.50	.54	.65	.85	.87

Coefficient of Sound Absorption, Fir-Tex Decorated Board, ½ In. Thick

Cycles	128	256	512	1024	2048	4096
Coefficient	.15	.41	.34	.35	.43	.48

SOUND TRANSMISSION TESTS

Sound Insulation Tests on Fir-Tex Acoustical Tile, 1 In. Thick

Frequency, cycles	128	256	512	1024	2048	4096
Transmission loss, db	14.5	15.4	19.9	27.8	33.2	32.6

Sound Insulation Tests on Fir-Tex Acoustical Tile 1 In. Thick

Frequency, cycles	128	256	512	1024	2048	4096
Transmission loss, db	18.6	18.8	21.0	24.2	30.2	28.4

STRUCTURAL STRENGTH

The wood fibres of Fir-Tex are unusually long and possess the natural superior strength of fir wood. When intertwined and felted together into an unlaminated board by the Fir-Tex patented process they result in a product which, in equal density, is not excelled in its approach to the original strength of the natural wood.

The tensile strength of Fir-Tex Insulating Board is well over 200 lbs. per square inch. It also excels in resistance to transverse strains which is an important factor because it is responsible for the "stiffening" value of Fir-Tex when used for sheathing and similar structural purposes.

OTHER PROPERTIES

Capillary Absorption

The Fir-Tex waterproofing process imparts a high resistance to the penetration of water or dampness. Tests by Robert W. Hunt Company show the absorption by volume to be 2.43% and factory tests for water absorption made every half hour during operation as low an average as 3%. This prevents disintegration and loss of strength of the board when subjected to such conditions and also preserves the insulating properties.

Vapor Absorption

Tests by the Robert W. Hunt Company show a vapor absorption by volume of 1.11%. Fir-Tex will not mildew or deteriorate in any manner because of conditions of humidity.

Odor

For many uses of insulating board a most important point for consideration is whether the board will retain and transmit odors. This factor has been tested by the Hunt Company under extreme conditions and the report shows that Fir-Tex does not transmit any odor to food from itself nor does it retain the odor of one food and transmit it to another later.

Fungus Growth

Fir-Tex will not foster the growth of fungus or mold. The Robert W. Hunt Company reports of tests of this property that, "this fibre board is more than ordinarily immune to attack by fungus growth."

Fire-retarding

Fir-Tex will not readily burn, being much less inflammable than wood.

Workability

Fir-Tex may be easily cut with an ordinary saw and presents a clean cut edge. A few passes with sandpaper on the cut surface make an edge almost as perfect as the factory cut. Nails will not easily pull through Fir-Tex. It may be beveled and grooved to meet any condition.

Color

The natural color of Fir-Tex is a rich brown. This color is decorative and tends to conceal joints which may not be covered.

Surface Texture

There is a very slight irregular pebble to the surfaces, caused by the manufacturing process.

This pebble is not of a distinguishing pattern and shows no contrast, either painted or natural when the boards are placed indiscriminately to form a wall surface.

FIR-TEX SUPER INSULATION

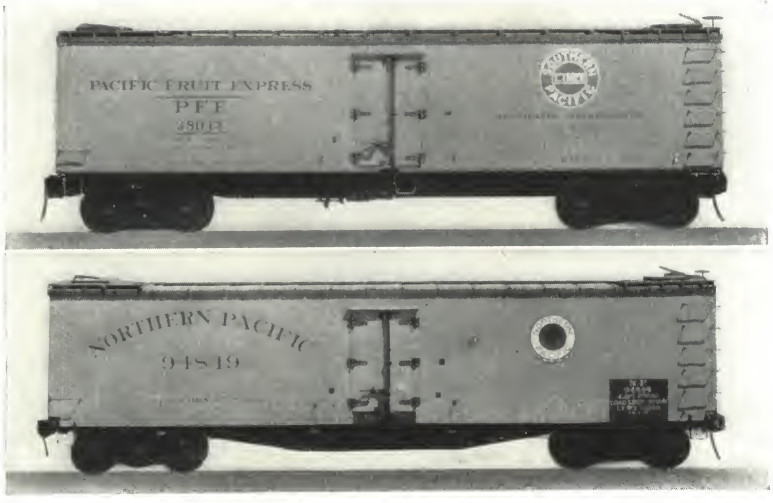
Semi-Rigid: ½, 1 and 1½-inch Thick

Fir-Tex Super Insulation has a lower density than Fir-Tex Building Board which is described on the following pages and therefore has higher thermal insulating value. Its resistance to the growth of fungus and mold, low water absorption and the other properties previously listed have placed this material in the front rank for use as cold storage and refrigerator insulation. Fir-Tex Super Insulation is especially designed to be used in places where cork would ordinarily be specified. Some of these uses such as refrigerators, refrigerator cars, trucks and breweries are shown in the illustrations on this page.

REFRIGERATOR INSULATION

The insulating values necessary to protect against excessive heat and cold are fully demonstrated in Fir-Tex Super Insulation by its adoption and use by a large number of companies which specialize in the manufacture of domestic and commercial refrigerators and in railroad refrigerating cars and cold storage plants, all of which are used to properly preserve food of all descriptions and to prevent spoilage until consumed. One of the newer uses of this unusual insulating material is in refrigerator automobile trucks for the transportation of ice cream, milk and similar food products.

The placing of this approved Fir-Tex Super Insulation between the outer and inner walls of cabinets, car trucks and cold storage buildings prevents the outside excessive heat from entering the interior and also prevents the interior cold from escaping. It also prevents damage from condensation.

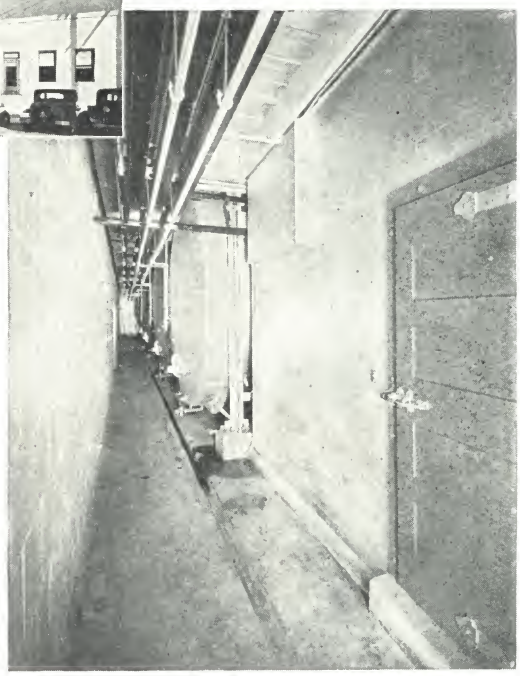


TYPICAL REFRIGERATION USES OF FIR-TEX SUPER INSULATION

COLD STORAGE INSULATION

Fir-Tex Super Insulation finds one of its largest uses in cold storage warehouses, breweries and similar plants.

The illustrations on this page show the application of Fir-Tex in the brewery of the General Brewing Company, San Francisco, Cal., of which Frederick H. Meyer was the architect.



General
Brewing
Company

San Francisco,
Cal.

Frederick H. Meyer
Architect

FIR-TEX ROOF INSULATION

It has long been recognized that the major part of heat loss from all buildings is through the roof. Fir-Tex has been especially constructed to retard the passage of this heat, and, as you have noted in other pages of this catalogue, Fir-Tex resistance to the growth of fungus and mold have placed it as one of the very best materials for roof insulation.

Architects specify various methods for using Fir-Tex for insulating roofs, and we would respectfully request that you consult them for the best methods, bearing in mind that wherever Cork has been specified, Fir-Tex will be as efficient.

The illustration shows the Fir-Tex being applied on the roof of the General Brewing Company of San Francisco.

Fir-Tex has been used for roof insulation on United States Post Offices at:

Oregon City, Oregon
Astoria, Oregon
Corvallis, Oregon
Portland, Oregon
Oakland, Cal.
Long Beach, Cal.
Marysville, Cal.
Longview, Wash.

FIR-TEX BUILDING BOARD

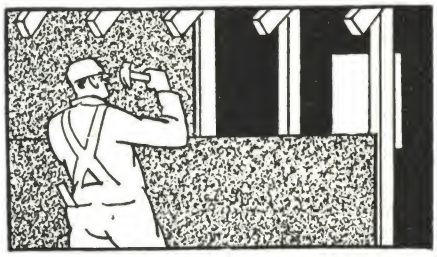
Rigid

Fir-Tex Building Board is a more rigid product than Fir-Tex Super Insulation, which is used primarily for refrigeration and cold storage work. The fibres in the Building Board have been interlaced without the use of any binder and are so placed together that in addition to the regular insulation properties of Fir-Tex it is also somewhat harder, denser and therefore stronger and on this account has a wide range of uses as will be outlined below.

This board is manufactured in thicknesses of ½ in., ¾ in. and 1 in., 48 in. in width and 6 to 12 ft. long.

SHEATHING

Fir-Tex Building Board is largely used for wall sheathing because of its remarkable insulating quality which, combined with structural strength, low water absorption and workability, make it excellently suited for such purposes under siding, shingles, stucco or brick veneer.



Fir-Tex Sheathing Is Nailed Directly to the Studding

Sheathing Application

The studs on which Fir-Tex Building Board is to be applied should be set 16 in. on centers and should offer an even nailing surface. At top and bottom ends of the board or wherever joints occur header strips should be nailed between studs.

The long dimension of the board should be placed parallel to the framing and should have a solid bearing on all edges. A space of ¼ in. should be allowed between boards at sides and ends and they should never be forced into place. Use large head galvanized "roofing" nails spaced 6 in. apart about ½ in. from the edge of the sheet.

Around window boxes, door frames, at top of foundation wall and under eaves the Fir-Tex should be carried to close contact, with headers inserted where necessary to provide firm nailing. These locations are the source of much air leakage and special attention should be paid to the construction at such points.

When Fir-Tex is used under stucco furring strips should be applied over the board and securely nailed to the studs. Spacing of the strips will vary to suit the metal lath to be used.

Under brick veneer the board will be applied in the usual way with metal ties or anchors for the brickwork nailed through the Fir-Tex to the studs at proper spacing.

Typical Residence Insulated with Fir-Tex Super Insulation

Voute Residence, Woodside, California
HENRY H. GUTTERSON, Architect

Dunn Residence, Menlo, California
GARDNER A. DAILEY, Architect

ROOF, FLOOR AND CEILING INSULATION

Since by far the largest leakage of air from a building occurs through the roof special attention should be given to the insulation applied thereon. In industrial plants the insulation can be applied on the roof construction below the built-up roofing as described on page 6. In the home insulation can be applied on top of the ceiling joists of the upper floor, on the under side of the rafters or on top of the rafters beneath the shingles or other roof covering. In the last mentioned method the Fir-Tex is nailed directly to the rafters and shingle lath, properly spaced, are nailed through the Fir-Tex to the rafters.

Fir-Tex for Roof, Floor and Ceiling Insulation

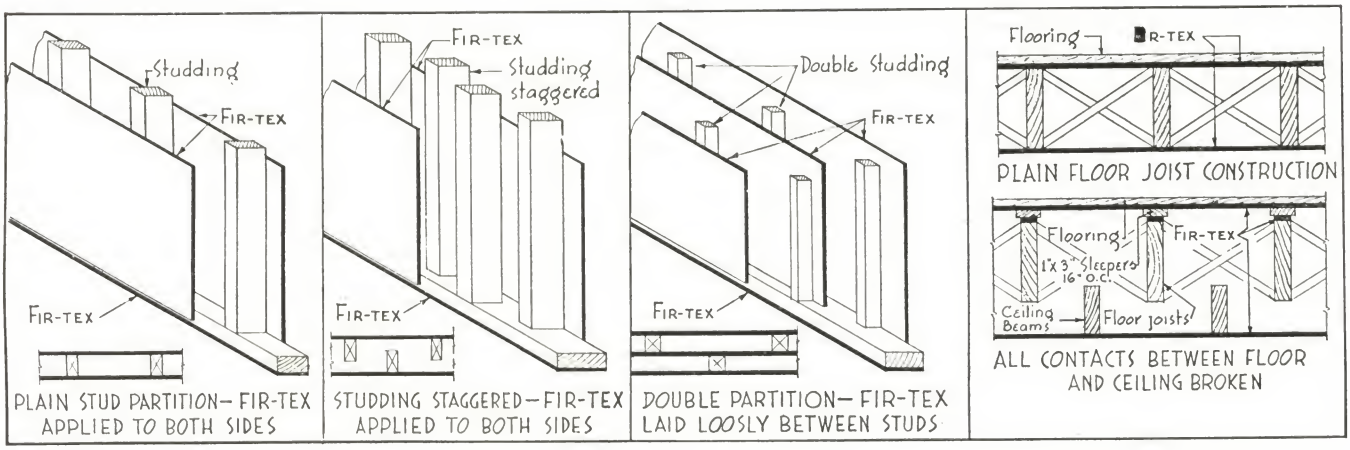
When Fir-Tex is applied to the under side of the rafters it provides an excellent ceiling material which can be decorated as desired and furnish an additional room.

Fir-Tex can be applied directly on top of the ceiling joists or better still on top of the rough flooring, beneath the finished floor. Not only does this reduce the leakage of air but it also provides sound deadening which is a most desirable feature and which is discussed below.

SOUND DEADENING

Sound deadening has recently become an important requirement for all types of construction particularly in apartments and in factories and offices where the noise in one department must be shut out from others.

On page 4 the excellent sound absorptive qualities of Fir-Tex have been described. These make it especially suitable for installation in locations demanding the best in this line. Many methods of sound deadening construction have been developed and from these we have selected a few which have proved most satisfactory and show them on this page. We believe the drawings clearly indicate each method but we will be glad to answer questions or suggest other methods if these do not meet your requirements.



INTERIOR FINISHING

Fir-Tex used on walls and ceilings in place of the usual wall surfacing materials will produce a most pleasing effect. The originality of the designer is practically the only limit to the possibilities.

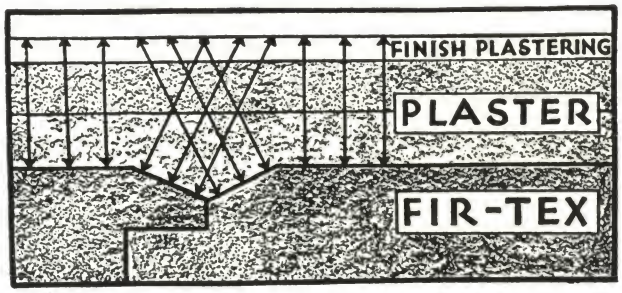
Fir-Tex is usually paneled in any of several different designs by applying battens over the joints. These battens or applied mouldings emphasize the size and shape of the panels and may or may not cover the joints between the boards but in any case they should have a firm nailing. This means that extra studs or headers should be inserted where necessary and that the studs should provide an even bearing or the boards should be wedged or blocked out to a smooth plane.

Fir-Tex Insulation Board Takes Many Attractive Finishes

By various treatments recently perfected by the principal paint manufacturers, Fir-Tex can be decorated after glue sizing by painting, kalsomining, sand finishing to resemble plaster or covering with wall paper. Some of these are described on the next page.

Manufacturers will usually provide directions for the most satisfactory method of application of their product to Fir-Tex but our various Sales Representatives will be glad to answer questions at any time. Instructions for applying Fir-Tex to walls and ceilings are the same as given under "Sheathing Application" on preceding page—except nails with small heads be used instead of galvanized "roofing" nails.

FIR-TEX INSULATING LATH



Fir-Tex Insulating Lath is the same material as Fir-Tex Building Board, except that it is cut to special size with all edges beveled and with upper and lower edges shiplapped as shown.

The long fir wood fibres and the rippled cellular surface make Fir-Tex Insulating Lath particularly adapted to receive plaster. This, together with the insulating properties of the material and its resistance to disintegration in the presence of moisture, make it unexcelled as a plaster base.

Wet or dry, Fir-Tex Insulating Lath, due to the special waterproofing treatment in manufacture, will hold nails securely, even at the edges. It is more inert than wood lath and consequently there will be less plaster cracking.

Sizes—Fir-Tex Insulating Lath is ½ in. thick, 18 in. wide and 48 in. long, wrapped 10 lath to bundle containing 6⅔ sq. yds.

Application of Fir-Tex Insulating Lath

1. To be applied with the beveled edges exposed to receive and reinforce the plaster.

2. To be laid horizontally across studding in a continuous line. The ends to be centered on the studding or joists. Leave $\frac{3}{16}$ in. space between ends of lath on studs or joists, and $\frac{1}{16}$ in. space between shiplapped edges. The end joints of lath to be staggered on studs and joists in all following courses.

3. To cut Fir-Tex lath, score with sharp edge of hatchet; break along scored line or cut with standard hand saw.

4. To cover curves and arches, *nail at the center first,* then bend and nail at each stud.

5. For 18-in. Fir-Tex lath use 6 nails per stud, using Blued nails 1⅛ in. long with $\frac{5}{16}$-in. heads. *Always nail lath at center first!*

6. All corners from ceiling to floor to be reinforced with standard galvanized metal. All angles, both ceiling and walls, to be reinforced with wire mesh or metal lath 6 in. wide, bent and stapled over the Fir-Tex lath to the framing every 12 inches. Reinforce joints between framing and masonry walls same as interior angles.

Plastering on Fir-Tex Insulating Lath

1. Use Gypsum plaster with not to exceed two parts of clean sand, measurement by weight.

2. Do not wet Fir-Tex Lath! Apply plaster, pressing well into all joints. *Spread the first coat of plaster very thin and even,* pressing into beveled edges and joints. Scratch and brown coats together must not exceed a thickness of ⅜ in. The finish coat should not be more than ⅛ in. thickness, and the total plaster thickness not more than ½ in. A standard plaster job is recommended, *making first coat thin, heavily troweled and spread evenly.*

3. Rod strokes should be in the direction of the joists or studs and should always span two joists or studs.

4. Do not let plaster freeze. Thoroughly ventilate and heat rooms if necessary.

DECORATING FIR-TEX

The decorative treatment of Fir-Tex may be divided into three types; first, an acoustical treatment which requires an open unobstructed surface to allow the absorption of sound waves; second, a water finish, and third, an oil finish.

In decorating Fir-Tex to bring out all its value from an acoustical standpoint, it is necessary to use materials which will not close the pores of the board and which are, of themselves, as porous as is possible in a surface treatment. The most satisfactory materials for this purpose have been found to be a diatomaceous earth to which is added about 10% by weight of fibrous asbestos or magnesia asbestos. A small amount of casein glue is used as a binder and to this mixture the necessary colors are added to get the shade desired. All materials are mixed dry and the last addition is a small amount of powdered borax. After the dry materials have been properly mixed sufficient water is added to make the material workable and applied over the Fir-Tex without the use of size to the board. If the material is to be sprayed the asbestos should be eliminated.

For an ordinary treatment over a 1-inch tile ceiling approximately one pound of material will be used per square yard. This treatment will cover the color of the Fir-Tex completely and should increase its acoustical value from ten to thirty per cent depending upon the roughness of the textured surface.

In decorating Fir-Tex with a water-mixed material it is essential that the surface of the board be well sized. There are various prepared sizes on the market or a satisfactory material can be made using about one and a half pounds of good flake glue to a gallon of water.

After the application of the size and the surface has thoroughly dried any of the usual types of regular kalsomine treatments or water texture products may be used. There are a number of these on the market and the manufacturer's directions should be followed in working out decorative effects.

For painted surfaces which include flat wall paints, and ordinary oil painted as well as enameled surfaces, the same size treatment described above should be used.

Where a smooth surface is required a steel trowel should be used to smooth down the surface as the glue size is applied. This will produce a wall nearly as smooth as a plastered surface. By continuing the troweling of the flat coats as they are applied over the size the surface can be made unusually smooth and is then ready for enamel or for working out the various tiffany blends, glaze coats or other decorative effects for which a flat, smooth surface is required.

Samples of various finishes and complete directions for their application can be obtained from nearly all paint manufacturers or will be furnished upon application to our Sales Representatives.

In applying wall paper it is advisable to use a glue size first and then apply blank stock or ordinary manila paper. Use glue size in the wall paper paste in the application of this blank stock. Do not lap the joints. The wall paper may be applied in the usual method.

For canvas or oilcloth materials use the glue size and blank stock then the usual method of application recommended for those materials.

FIR-TEX DECORATED ACOUSTICAL BOARD

FIR-TEX Acoustical Board is especially produced for reducing unwanted noises in the acoustical correction of offices, theatres, grange halls and auditoriums of all kinds. We will furnish upon request descriptions showing special decorations and styles.

This material comes in small tile sizes, beveled in various patterns to produce the best artistic, as well as acoustical results. Its beautiful nut-brown color is very desirable for moving picture theatres and other public places.

FIR-TEX ECONOMY BOARD

FIR-TEX is manufactured in a wallboard ⅜ in. thick. This is especially adapted for uses in small homes, cabins and camps, where the quantity of insulation is not considered of so much importance as its utility for wallboard purposes.

This material is manufactured in the same sizes as ½-in. FIR-TEX Building Board, namely, 4 ft. wide, 6 to 12 ft. long.

FIR-TEX Insulation, used as outlined above, will reduce fuel bills at least 40%. It will also eliminate all drafts and will make the home exceedingly quiet, eliminating a large amount of noise from street traffic.

FIR-TEX BUILDING BOARD

FIR-TEX ½-in. Building Board can be used—as shown in the illustration at right—from basement to attic.

(1) FIR-TEX Insulation on roof.

(2) FIR-TEX Insulation under rafters.

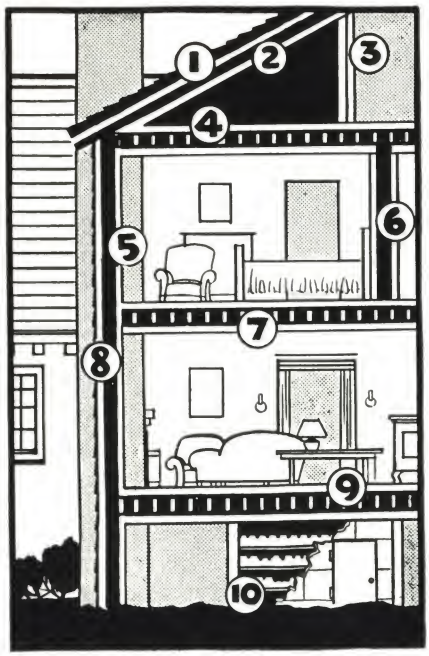
(3) FIR-TEX for attic room partitions.

(4, 7 and 9) FIR-TEX Insulation between Floors.

(5 and 6) FIR-TEX Insulating Plaster Lath.

(8) FIR-TEX Board on outside of studding.

(10) FIR-TEX Board for basement partitions.



TYPICAL FIR-TEX INSTALLATIONS

Stent Residence
Atherton, California

GARDNER A. DAILEY, Architect

Above:
Kingsley School
Essex Fells, N. J.
W. Frank Bower & Son,
Architects

Swanson Residence
Ivanhoe Park, New Jersey

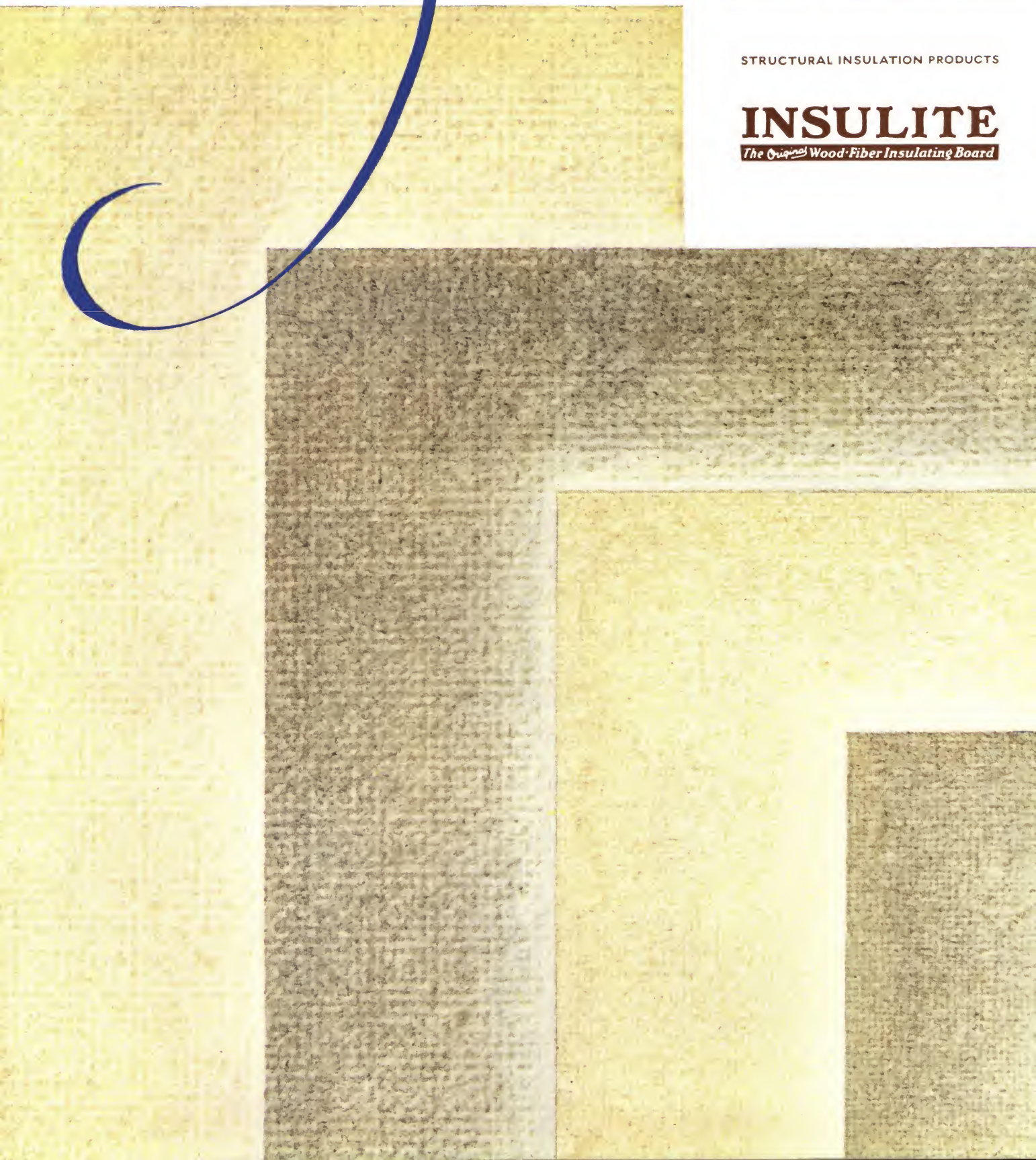
FIR-TEX
SUPER INSULATION

Insulite

STRUCTURAL INSULATION PRODUCTS

INSULITE

The Original Wood-Fiber Insulating Board



INSULITE

STRUCTURAL INSULATION BOARD

Made by

THE INSULITE COMPANY

Minneapolis, Minnesota

Mills: International Falls, Minnesota *and* Karhula, Finland

• • •

THE COMPANY—EXPERIENCE AND FACILITIES

EXPERIENCE—Insulite, the original structural wood fiber insulating board, has been made and marketed for more than 20 years. Experience gained through constant observation of actual installations of Insulite Products during this period, coupled with exhaustive laboratory research work, assures dependable and comprehensive information on the practical applications of Insulite in its various forms. This background of many years of practical experience offers the ultimate consumer of Insulite Products an unsurpassed service and protection.

MANUFACTURING FACILITIES—A thoroughly modern plant capable of producing an output of 300,000,000 sq. ft. per year assures an ample supply of material at all times. Special machines designed by THE INSULITE CO. Engineering Department make possible the fabrication of special insulation items required in the industrial field. Such machines provide finished insulation units to fit practically any need at exceptionally low cost.

DISTRIBUTION—Insulite Products are distributed nationally through retail lumber dealers who maintain large stocks for immediate delivery. To facilitate shipping and handling without injury, these materials are neatly and securely packaged in strong, easily handled bundles. This service assures delivery to the job in the same condition as when the materials leave the mills.

Insulite Products are carried by dealers throughout the world.

SERVICE—THE INSULITE CO. maintains at its various offices a Service Department personneled with experienced Insulation Engineers. Competent representatives and service men are available in all principal cities. The Company tenders its full cooperation and service facilities to architects in the solution of insulation problems.

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ALSO MANUFACTURERS OF ACOUSTICAL MATERIAL

INSULITE MANUFACTURING PROCESS

Insulite Structural Insulation is made from the tough, durable fibers of northern woods. The wood is reduced to fiber by the cold grinding process which assures not alone the retention of the natural protective gums inherent in the wood and the full strength of the fiber but the natural attractive light color of fresh wood as well.

The fibers are first subjected to a chemical treatment which renders the finished product moisture-resistant. The formation of the fiber into structural sheets is accomplished by a felting process developed to give maximum strength and heat resistance through the proper interlacing of the fiber which seals in millions of minute air cells.

PHYSICAL CHARACTERISTICS

TESTS—All test data, the results of which only are here given, are substantiated by complete reports verified by competent laboratory sources. Copies of complete test data will be furnished to those interested on request.

LOW THERMAL CONDUCTIVITY—The conductivity of standard Insulite structural insulation products is .33 B.t.u.'s per sq. ft., per inch thick, per hour, per degree F. (Bureau of Standard's test of 16.9 lb. density Insulite.)

TENSILE STRENGTH—The standard structural products have tensile strength averaging 352 lbs. per sq. in. In the tensile test, specimens 2 in. wide x 12 in. long were cut from the ½ in. thick board. Specimens were tested in a standard tension testing machine determining the breaking loads.

MODULUS OF RUPTURE—The standard structural products have a modulus of rupture averaging 475 lbs. per sq. in. Specimens 4 in. wide cut from ½ in. thick board were placed on supports 10 in. O.C. A concentrated load, uniformly increased, was applied at the midpoint and increased until failure. From this breaking load, the bending moment was determined as well as the deflection at the center of the span.

RESISTANCE TO MOISTURE—A specimen 12 in. square x ½ in. thick when immersed for a period of two hours to a depth of 1 in. to its upper surface in running water at a temperature of 70° F. shows an absorption of 11.18 per cent.

EXPANSION—Under test conditions similar to those above described for absorption the expansion due to moisture absorption is 0.112 per cent increase in length expressed as a percentage of the total length under air dry conditions.

STRUCTURAL STRENGTH—Tests on Insulite Building Board used as sheathing on frame construction prove that when properly applied the ½ in. thick board is nearly three times as strong (so far as bracing against distortion) as standard No. 2 8-in. fir shiplap sheathing applied horizontally in the customary manner.

PLASTER BOND—Authentic tests show that to rupture the bond between gypsum plaster and Insulite Lok-Joint Lath requires a pull of *1152 lbs. per sq. ft.*

FIRE RESISTANCE—Insulite is slow burning. Since there are no open joints in the standard methods of application to permit inflow of air, Insulite forms a barrier against fire travel.

NON-COMPRESSIBLE—Insulite will not compress under normal standard methods of use. When laid over roof decks under standard built-up roofing, it is sufficiently firm to prevent injurious dents or cutting of the roofing under normal use.

EASY TO INSTALL—Insulite is cut and nailed like lumber. Its light weight and convenient units of size for various purposes insure easy handling at low labor costs.

UNIFORMITY—Adequate laboratory control and mill inspection assure absolute uniformity in density, structural strength, and appearance. Packing methods eliminate damage under normal shipping conditions.

COLOR AND SURFACE TEXTURE—Due to the method of manufacture, Insulite has a uniformly pleasing light color—the color of clean new wood. It is also available in "graylite" color, a neutral shade of grayish brown. As marketed, it is furnished with two distinct attractive surface textures as follows, and illustrated on front cover:

The "Burlap Surface" simulates a loosely woven fabric.
The "Fine Surface" is smooth and simulates a closely woven fabric with a distinct surface texture.

Insulite Mills, International Falls, Minnesota

INSULITE THERMAL INSULATION PRODUCTS

INSULITE BUILDING BOARD

Description—Square edge boards of standard composition and density. One-half and three-quarter inch thicknesses are homogeneous; one-inch thickness is laminated (two half-inch thicknesses glued.)

Uses—Insulating structural sheathing and roof boarding, exterior and interior wall and ceiling finish. Also sound deadening.

Sizes (Area)—4 feet wide x 5, 6, 7, 8, 9, 10 and 12 feet long.

Thicknesses and Surface Finishes—½, ¾, and 1 inch thick in Burlap and Fine surfaces

INSULITE GRAYLITE BUILDING BOARD

Description—Square edge boards of standard composition and density of a grayish brown color.

Uses—Insulating structural sheathing and roof boarding, exterior and interior wall finish. Also sound deadening.

Sizes (Area)—4 feet wide x 5, 6, 7, 8, 9, 10 and 12 feet long. 6 feet wide x 8 and 12 feet long.

Thickness and Surface Finishes—½ inch thick in Burlap and Fine surfaces.

INSULITE STRUCTURAL SHEATHING

Description—A board of standard composition with increased density, furnished in the thickness usually employed for sheathing purposes—25/32 in. The color is a distinctive grayish brown, and the slightly increased density gives a marked increase in structural strength.

Uses—Highly efficient insulating structural sheathing and insulating roof boarding.

Sizes—4 ft. 0 in. widths. Lengths to 12 ft. 0 in.

Thickness and Surface Finishes—25/32 in. homogeneous composition. Burlap and fine screen surface textures.

INSULITE LOK-JOINT LATH

Description—Fabricated from boards of standard composition and density. Long edges shiplapped to prevent air infiltration and maintain continuity of insulation. One-half and three-quarter inch thicknesses are homogeneous. One-inch thickness is laminated (two half-inch thicknesses stapled). Galvanized wire "loks," spaced midway between framing supports 16 in. O.C. on bottom edge of each unit (an exclusive Insulite feature) which reinforce the unsupported horizontal joint and minimize yielding under trowel pressure during the pastering operation. These "loks" also serve as plaster grounds assuring not less than ¼ in. thickness of plaster on first coat.

Use—Interior insulating plaster base.

Size (Area)—18 x 48 inch.

Thicknesses and Surface Finish—½, ¾, and 1 inch thick, Burlap finish—*a surface to which plaster will adhere.*

INSULITE TILE (STANDARD AND GRAYLITE)

Note: *See joint details on page 4.*

Description—Fabricated from boards of standard composition and density. On finished surfaces all four edges are neatly beveled. Tile can be furnished in two distinctive colors—Standard, light color; Graylite, gravish brown. Available in three types of joints—V-Lap, V-W, and B-B.

Uses—Insulating interior wall and ceiling finish secured over plaster or similar finished surfaces with cement or/and brads or to structural framing or furring, except where one or the other is specially specified. In natural or stained finish is an excellent acoustical absorbent.

Thicknesses and Surface Finishes—½ in., ¾ in. and 1 in. thick in Burlap and Fine Surfaces.

V-Lap—V-shaped joint similar to V-W except that it is not reversible. Sizes in this type are (small) 6 x 6 in.; 6 x 12 in.; 8 x 8 in.; 8 x 16 in.; 12 x 12 in.; 12 x 24 in.; 16 x 16 in.; 24 x 24 in.—(large) 16 x 32 in.; 18 x 32 in.; 24 x 32 in.; 16 x 48 in.; 18 x 48 in.; 24 x 48 in.

V-W—V-shaped interlocking joint symmetrical about the center line of the tile, making it reversible so that either surface may be exposed. Sizes in this type are 6 x 6 in.; 6 x 12 in.; 8 x 8 in.; 8 x 16 in.; 12 x 12 in.; 12 x 24 in.; 16 x 16 in.; 24 x 24 in.

B-B—Beveled and Butt joint all around each unit. Sizes in this type are 6 x 6 in.; 6 x 12 in.; 8 x 8 in.; 8 x 16 in.; 12 x 12 in.; 12 x 24 in.; 16 x 16 in.; 24 x 24 in.

INSULITE PLANK (STANDARD AND GRAYLITE)

Note: *See joint details, page 4.*

Description—Fabricated from both the Standard and Graylite board into several widths with V-W or B-B joints on the long edges. May be obtained either with or without a bead which runs parallel to the long edges in addition to the V-groove which is provided at all joints.

Use—Insulating interior wall finish used either vertically or horizontally to provide a random plank effect. Can be left natural, stained, or painted.

Sizes—6, 8, 10, 12, and 16 in. widths.
6, 8, 9, 10, and 12 ft. lengths.

Thicknesses and Fabrications—½, ¾, and 1 in. thick with either B-B or V-W joint, with or without bead and choice of Standard light color or Graylite. Ends cut square.

INSULITE STANDARD ROOF INSULATION

Description—Fabricated from boards of standard composition and density. Various thicknesses are laminated by stitching two standard thicknesses together. The 1, 1½, and 2 inch thicknesses can be provided with the original Insulite "Offset" feature. This feature consists of a 1 inch shiplap on all four edges which provides heat sealing at joints (continuity of insulation).

Use—Insulation over various types of roof decks under built-up finished roofing.

Size (Area)—24 x 48 in.

Thicknesses and Fabrications—Homogeneous with square edges—½ and 1 inch thick. Stitched with 1 inch offset edges—1, 1½, and 2 inch thick. Stitched with square edges—1½ and 2 inch thick.

INSULITE ASPHALTED ROOF INSULATION

Description—Fabricated from sheets of standard composition and density in which is included asphalt uniformly distributed through the board. Meets established thermal insulation efficiencies for roof insulation products.

Use—Insulation over various types of roof decks under built-up finished roofing.

Size (Area)—24 x 48 in.

Thicknesses and Fabrications—Homogeneous with square edges, ½ in. thick. Stitched with 1 in. offset edges, 1 in. thick. Stitched with square edges, 1, 1½, and 2 in. thick

INSULITE COLD STORAGE INSULATION

Description—Fabricated from special low density board of standard Insulite composition. Various thicknesses are accomplished by lamination (gluing) of standard thicknesses. Blocks are square edged. Insulite Low Density Insulation has an average conductivity of .30 B.t.u. per sq. ft., per inch thick, per hour, per degree F. with a density which averages approximately 11½ lbs

Uses—For insulating floors, walls, and ceilings of ice manufacturing plants, cold storage plants, etc.

Sizes (Area)—6, 9, 12, 18, 24 in. wide x 36 in. long; 12, 18, 24 in. wide x 18 in. long; 24 in. x 24 in., 12, 24 in. wide x 48 in. long.

Thicknesses—1, 1½, 2, 3, and 4 inches thick.

INSULITE SEALDSLAB (COLD STORAGE INSULATION)

Description—Fabricated from the same low density material and in the same manner as described for standard Cold Storage Insulation. Each unit of Sealdslab is "sealed dry" with a continuous impregnation of especially prepared asphalt to a uniform depth of 3/32 in. on all faces which, in addition to the final asphalt coating applied on the job, provides a superior seal against moisture.

Uses—Especially adapted to use in freezers; meat, beer, and creamery coolers; milk cooling tanks; fruit and vegetable storage rooms; general cold storage rooms; and in the air conditioning field.

Sizes (Area)—6, 9, 12, 18, 24 in. wide x 36 in. long; 12, 18, 24 in. wide x 18 in. long; 24 in. x 24 in.; 12, 24 in. wide x 48 in. long.

Thicknesses—1, 1½, 2, 3, and 4 inches thick.

INSULITE HARDBOARD PRODUCTS

Description—Specially fabricated boards of different densities, hardness, and thicknesses, sizes up to 4 x 12 ft.

Dualboard—A medium density board, ¼ in. thick, golden oak brown.

DeLuxe Dualboard—A medium heavy density board, ¼ in. thick, golden oak brown.

HardBoard—Heavy density board, 1/10, 1/8, 3/16, 1/4, 5/16, in. thick, golden oak brown.

Tempered HardBoard—Extra heavy density board, 1/10, 1/8, 3/16, 1/4, 5/16 in. thick, burl walnut brown.

Black Tempered HardBoard—Extra heavy density board, 1/10, 1/8, 3/16, 1/4, 5/16 in. thick, slate black.

Panel Tile—Extra heavy density board, 1/8 and 3/16 in. thick, burl walnut brown scored in 4 in. squares.

INSULITE FIBEROCK

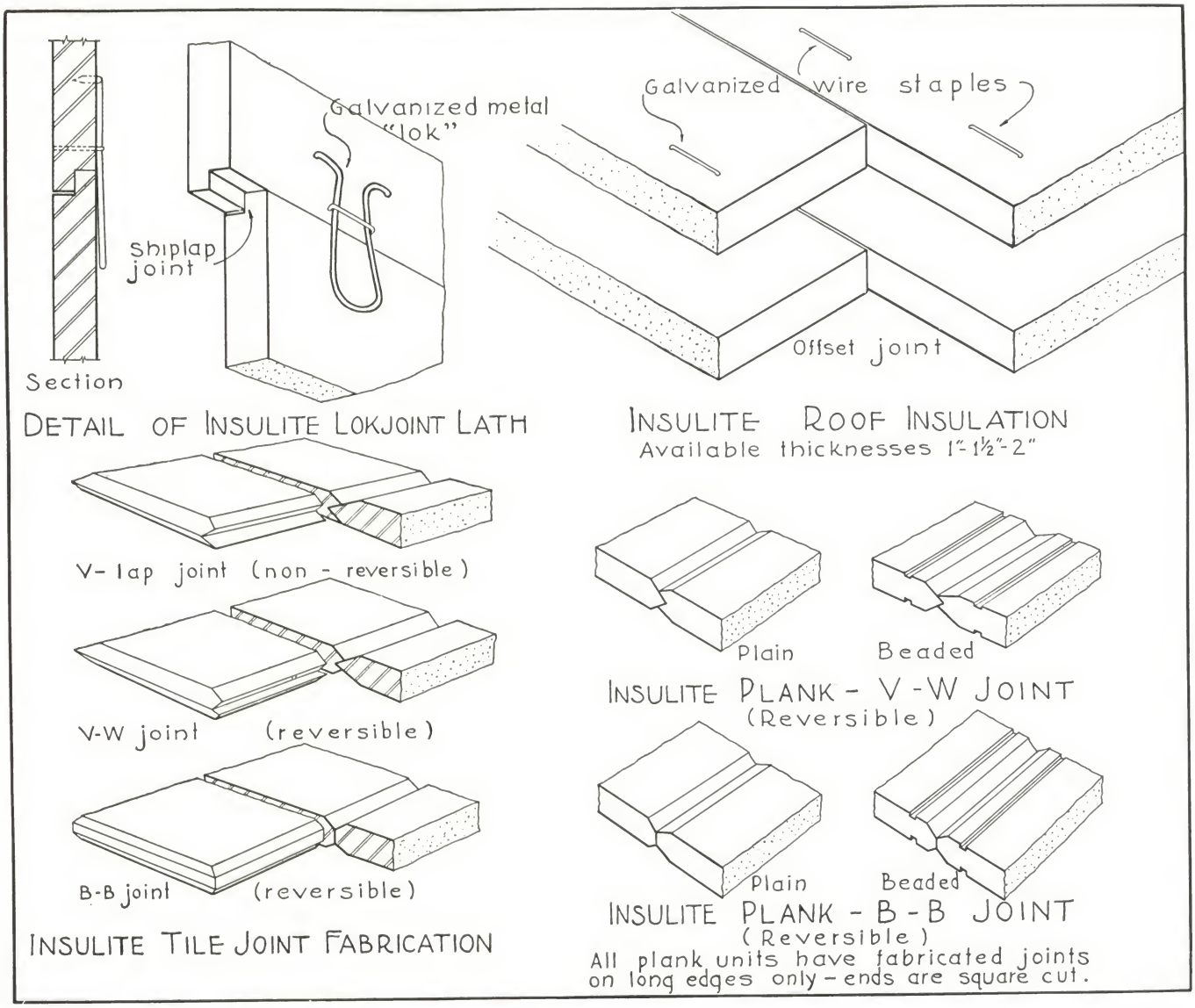
A quality mineral wool blown from natural rock, treated during manufacture to increase resistance to moisture absorption. Clean, inorganic, incombustible, permanent, insect and vermin proof, unexcelled as efficient insulation

Available in three forms:

Fiberock loose wool (bags) for hand application.

Fiberock granulated (bags) for hand pouring.

Fiberock bats (cartons) for hand placement.



(2A) FURRING

Fur all exterior masonry walls to receive Insulite Lath with *(1 x 2 in.) (specify)* furring strips set 12 or 16 in. O.C. accurately shimmed to a true, level plane. Secure substantially to masonry.

(3A) GROUNDS

Furnish and erect, substantially secured to framing members through the Insulite Lath, full ½ in. wood grounds for all interior wood trim.

Where *(¾ in.) (and) (1 in.)* thick Insulite Lath units are used, add the necessary trim grounds on all door and window frames to compensate for this thickness plus a full ½ inch of plaster.

(4A) PLASTERING

(4A1) Caution—Do not wet Insulite Lath before applying plaster.

(4A2) Inspection—Inspect nailing and notify lather of any portions of Insulite Lath not adequately secured in accordance with paragraph No. 3 above. See that all corners and angles are reinforced with metal corner beads accurately set to line with grounds and that all re-entrant angles are reinforced with expanded metal angle strips.

(4A3) Plaster—Use standard gypsum cement plaster or gypsum wood fiber plaster for scratch and brown coats mixed accurately in accordance with the manufacturer's specifications. Both scratch and ground coat shall be mixed to a wet consistency to allow for application with light trowel pressure and to facilitate darbying. Use any standard plaster finish over the brown coat, such as gypsum, lime, or lime gauged with gypsum mixed in accordance with the manufacturer's specifications.

Note: *Lime plaster or lime gauged with gypsum should not be used for scratch and brown coats.*

(4A4) Application—Apply in three (3) coats to full ½ in. grounds in accordance with the plaster manufacturer's specification. Surfaces shall be rodded to a true plane. All corners and angles shall be plumb and true. Wherever necessary, and particularly on ceilings, provide plaster screeds to insure an even, uniform full ½ in. plaster thickness.

Note: *The maintenance of a uniform full ½ in. thickness of plaster cannot be too strongly stressed. Most plaster defects where a fibrous or board plaster base is used may be attributed to a weak, thin plaster coat, inadequate to withstand the normal building strains of shrinkage, settlement, and vibration.*

In applying the scratch coat of plaster, this shall be carefully pressed into all joints.

If the brown coat becomes stiff and sets during darbying, wet down the surface to allow for darbying without undue pressure against the plaster surface.

Darby strokes shall be in the direction of framing members with the darby spanning two studs or joists.

(4A5) Ventilation—Provide adequate ventilation for the proper drying of the plaster.

Note: *Due to the moistureproof characteristics of Insulite Lath, all plaster moisture must be carried off by the air in contact with the exposed plaster surface.*

(4A6) Heat—Provide adequate heat to prevent injury by frost.

(5A) ELECTRIC OUTLETS

Where ¾ in. or 1 in. thick Insulite Lath units are used, set electric outlet boxes to accommodate a full 1¼ in. or 1½ in. thickness respectively from face of stud or joist to face of plaster.

Section . . . 3
MASTER SPECIFICATIONS

INSULITE INTERIOR FINISH INSULATION

Note: *For Physical Characteristics, see page 2. For descriptions, dimensions, surface finishes, etc., see page 3.*

INSULITE BUILDING BOARD

(1) WORK INCLUDED

Note: *Here list and locate definitely the wall and ceiling areas to be covered. If more than one thickness is used or more than one type of surface exposed, list separately and the respective locations or areas covered.*

Note: *For the best results, interior detailed elevations of walls and plans of ceilings showing joint or panel design should be included in the drawings and referred to here.*

(2) FRAMING

(2a) Studs and joists shall be framed to conform accurately to the design of board spacing or paneling, set 12 or 16 in. O.C. Use additional studs, joists, and headers where necessary. Provide headers back of all wainscot caps, chair rails, baseboards, and other heavy wood trim.

(2b) It is imperative for satisfactory results that framing to receive Insulite Building Board used as interior finish shall be selected for straightness and uniform thickness to form a true, even nailing base. Bent studs shall be straightened by notching and wedging from the concave side. Framing members that are bent sideways so that the Insulite joint will not center on the bearing shall be forced into position with cut-in headers.

(2c) Fur masonry walls with *(1 x 2 in.) (specify)* furring strips set 12 or 16 in. O.C. accurately shimmed to a true, level plane. Secure substantially to masonry.

(3) MATERIAL

Interior finish shall be *(standard) (Graylite)* Insulite Building Board as made by The Insulite Company, Minneapolis, Minn. Boards

shall be *(½ in.) (and) (¾ in.) (and) (1 in.) thick (as designated in paragraph 1)*, 4 ft. wide x 5, 6, 7, 8, 9, 10 and 12 ft. long as best adapted, free from surface imperfections and edges where not covered by trim or battens free from deleterious dents and abrasions. Exposed surfaces shall be *(Burlap) (and) (Fine)* finish.

Note: *Graylite Board is ½ in. thick only.*

(4) CUTTING

All cutting and fitting shall be done in a neat, workmanlike manner. Where joints are not exposed, cut with a fine tooth saw, using a sharp blade with rapid strokes and a minimum of pressure. Where joints are exposed, cut with a sharp linoleum knife against a straight edge.

Note: *Sawing if forced leaves a burr, often unsatisfactory for decorating. Cutting with a sharp linoleum knife leaves a smooth, true edge and can be accomplished in three strokes.*

(5) BEVELING AND ROUNDING EDGES

Note: *For certain schemes of interior decoration, the Insulite may be beveled or rounded on the edges to produce a broad V-groove at each joint. Where battens consisting of strips of Insulite are used to cover the joints, the edges of the battens may be beveled or rounded with excellent decorative effect.*

(5a) *(Beveling) (and) (rounding)* of edges of Insulite *(boards) (and) (battens)* shall be done in a uniform, workmanlike manner, straight and true to line before they are erected.

(5b) Beveling shall be done with a beveling tool or with sandpaper or emery cloth wrapped around a wood block.

(5c) Rounded edges shall be accomplished by means of a piece of sandpaper held in the hand.

6) BATTENS

Note: *Battens of Insulite, wood or metal may be used to cover the Insulite joints, or the joints may be beveled or rounded as best adapted to the particular decorative scheme.*

(6a) Insulite battens shall be *(specify thickness and width)* with edges neatly *(beveled) (rounded) (specify).*

(6b) Wood battens shall be *(specify thickness and width and design).*

(7) METAL JOINT MOULDINGS

Note: *There are various sizes and designs of stainless steel, aluminum, and other metal mouldings manufactured for use in covering the joints of insulating wall boards.*

Metal joint battens shall be as detailed made by *(specify name of manufacturer, type of metal and finish).*

(8) APPLICATION

(8a) General—Insulite shall be applied immediately prior to the erection of interior wood trim. The Insulite boards shall be placed singly around the room and allowed to stand at least 24 hours before erection to allow adjustment to atmospheric conditions. In exceptionally dry weather moisten the Insulite lightly on side facing supports and pile the boards 24 hours before erection.

Note: *Insulite, like other materials used in interior construction (such as wood trim), responds to some extent to changes in humidity and temperature; consequently discretion should be exercised in its application.*

Apply Insulite with the length parallel with framing members with *(Burlap) (and) (Fine)* face exposed *(as designated in par. 1)*. All joints shall center over framing members.

(8b) Spacing—

(8b1) Battened Joints—Space boards $\frac{3}{16}$ in. apart at edges.

(8b2) Exposed Joints—Bring boards to a moderate contact. Do not force into place.

(8c) Nails—

(8c1) For ½ in. thick Insulite, use standard 1½ in. galvanized roofing nails with ⅜ in. heads where joints are covered with battens or wood trim. Use 1½ in. finishing nails where nailing is exposed, driving nails at an angle of 45° alternating from nail to nail.

(8c2) For *(¾ in.) (and) (1 in.)* thick Insulite, use 8d common nails where joints are covered with battens or wood trim. Use 2 in. finishing nails where nailing is exposed.

(8d) Nailing—First nail Insulite to intermediate framing members and then nail the edges. At all edges space nails 3 in. apart O.C. and approximately ⅜ in. away from the edge. On intermediate framing members, space nails 6 in. apart O.C.

Where nailing is exposed, drive finishing nails at an angle and set the heads neatly below the Insulite surface. Where nails are covered by battens or wood trim, drive nails until the heads are slightly below the Insulite surface.

(8e) Battens and Wood Trim—Apply battens and wood trim *(as detailed)* over Insulite with nails of sufficient length to pass through the Insulite and penetrate the framing members at least 1 in.

(8f) Metal Moulding—Apply metal mouldings as detailed. *(Specify any particular method of attachment, such as clips, screws, etc.).*

INSULITE LARGE TILE AND INSULITE PLANK

(9) WORK INCLUDED

Note: *Here list and locate definitely the wall and ceiling areas to be covered. If more than one type of surface is exposed, list and locate separately.*

(10) FRAMING, ETC.

Note: *Where tile units are applied directly to framing members, framing shall be as specified in paragraph 2, page 7.*

(10d) Cover framing with a wood sub-base consisting of No. 1 Common Grade of Douglas Fir, West Coast Hemlock, or equivalent, 4, 6, or 8 in. wide, matched 25/32 in. thick, lumber to form a continuous nailing base.

Note: *Use (10d) only where staggered end joints in alternate courses are set midway over the long sides or otherwise so they will not fall on 16 in. centered framing members.*

(11) MATERIAL

Interior finish shall be Insulite *(Large Tile) (Plank)* as made by The Insulite Company, Minneapolis, Minn. Units shall be *(½ in.) (and) (¾ in.) (and) (1 in.)* thick *(16 x 32 in.) (18 x 32 in.) (24 x 32 in.) (16 x 48 in.) (18 x 48 in.) (24 x 48 in.) (specify plank type and size) (with beveled edges and interlocking joints)* delivered to the building site in the original manufacturer's packages. Exposed surface shall be *(Burlap) (and) (Fine)* finish. *(Specify color.)*

(12) CUTTING

Note: *As specified in paragraph 4 above for Insulite Building Board.*

(13) APPLICATION

(13a) General—Apply units with the beveled edge side out.

(13a1) Units shall be applied at right angles to the framing members. End joints shall center over framing members staggered in successive courses *(as detailed).*

Note: *Use (13a1) where units are applied to framing members; (13a2) where units are applied over solid wood base.*

(13a2) Units shall be applied over wood sub-base with jointing of successive courses staggered *(in accordance with the detail drawings) (specify).*

(13b) Spacing—Bring boards to a moderate contact. Do not force into place.

(13c) Nails—*(Use 1½ in. finishing nails for ½ in.) (Use 2 in. finishing nails for ¾ and 1 in. thicknesses.)*

(13d) Nailing—Nail tile units to each framing member with nails spaced uniformly approximately 3 in. O.C. Drive nails at an angle and set the heads neatly below the surface.

(13e) Overlays, Wood Trim, Etc.—Apply *(decorative Insulite overlays) (and) (wood trim)* over Insulite Tile with nails of sufficient length to pass through the Insulite and penetrate the wood at least 1 in.

INSULITE SMALL TILE

(14) WORK INCLUDED

Note: *Here list and locate definitely the wall and ceiling areas to be covered. If more than one type of surface is exposed, list separately and the respective locations or areas covered. For the best results, accurate, detailed elevations of walls and plans of ceilings showing disposition and sizes of units should be included in the drawings and referred to here.*

(15) WOOD NAILING BASE AND FURRING STRIPS

(15a) Wood Nailing Base—**Note:** *Where Insulite Small Tile is not applied over plastered surfaces, a wood nailing base as specified in (10d) for Insulite Large Tile may be used.*

(15b) Furring Strips—Wood furring strips, 1 x 2 in., shall be applied to the framing members, so disposed as to form a firm nailing base for the tile units. Spacing shall in no case exceed 16 in. O.C.

Note: *Use where Insulite Tile is not applied over plastered surfaces or wood nailing base.*

(16) MATERIALS

Interior finish shall be Insulite Small Tile as made by The Insulite Company, Minneapolis, Minn. Tile shall be bevel edged on exposed surface *(½ in.) (and) (¾ in.) (and) (1 in.)* thick x *(6 x 6 in.) (6 x 12 in.) (8 x 8 in.) (8 x 16 in.) (12 x12 in.) (12 x 24 in.) (24 x 24 in.) (16 x 16 in.) (as indicated on details).* Exposed surface shall be *(Burlap) (and) (Fine)* finish. *(Specify color.)*

(17) CUTTING

Note: *As specified in par. 4, page 8, for Insulite Building Board.*

(18) APPLICATION

(18a) General—Insulite Small Tile shall be laid in exact accordance with the detail drawings.

(18b) Spacing—Bring units to a moderate contact. Do not force into place.

(18c) Cement—Cement shall be *(specify).*

(18d) Nails—Use *(4 penny casing or finishing nails for ½ in.) (2 in. finishing nails for ¾ and 1 in.)*

Note: *Use zinc-coated nails where high humidities prevail.*

(18e) Cementing and Nailing Over Plaster Base—Apply spots of cement to the back surface near each corner with additional spots approximately 10 in. apart on large tile. Exercise care to prevent cement from appearing on the exposed finished face. Press the tile into position, level and true, and nail tiles in position with one or two nails at each corner and additional nails as required for large tile. Set heads neatly below the Insulite surface.

Note: *The above method advocated in the better classes of work.*

(18f) Nailing Only Over Plaster Base—Nail tile in position using 5 penny nails with two nails at each corner and additional nails as required for large tile. Drive nails at 45 degree angle and set heads neatly below the Insulite surface. *(Use longer nails for ¾ and 1 in.)*

Note: *Use the above method only where the plaster is sound.*

(18g) Nailing over Wood Backing (Continuous or Furring Strips)—Nail tile in position using two nails at each corner and additional nails as required for larger tile. Drive nails straight or at a slight angle with heads set below the surface.

(18h) Overlays—Apply decorative overlays by spot cementing and nailing or by nailing only. Use nails of sufficient length driven at an angle, with heads set, to assure adequate penetration of nailing base.

LARGE TILE—Application Specifications, page 8

SMALL TILE—Application Specifications above

INSULITE EXTERIOR FINISH INSULATION

Section . . . 4
MASTER SPECIFICATIONS

Note: *Insulite Building Board may be used to advantage in many classes of work as an exposed exterior finish over frame construction.*

(1) WORK INCLUDED

Note: *Here list and locate the wall surfaces to be covered. If more than one thickness is used or more than one type of surface exposed, list separately.*

(2) FRAMING

Studs shall be framed to conform accurately to the design of board spacing or paneling, set 16 in. O.C. Use additional studs and headers where necessary. Provide headers back of all horizontal heavy wood trim. Where necessary, straighten and stay studs back of Insulite joints to provide central bearing under joints.

(3) MATERIAL

Exterior finish shall be *(standard) (Graylite)* Insulite Building Board as made by The Insulite Company, Minneapolis, Minn. Boards shall be free from surface imperfections *(½ in.) (and) (¾ in.) (and) (1 in.)* thick *(as designated in paragraph 1)*, 4 ft. wide x 5, 6, 7, 8, 9, 10, and 12 ft. long as best adapted. Exposed surface shall be *(Burlap) (and) (Fine)* finish.

Note: *Graylite Board is ½ in. thick only.*

(4) APPLICATION

(4a) General—Moisten and pile Insulite boards one day before application. Remove boards from the pile just prior to nailing to the framing. Moistening shall be accomplished by sprinkling lightly with a hose or sprinkling can or from a broom dipped into a pail of water.

Apply Insulite with the length parallel with framing members *(Burlap) (Fine)*, face exposed. All joints shall center over framing members.

(4b) Spacing—Space boards $\frac{3}{16}$ in. apart at all edges. At window and door frames bring Insulite in close contact with frame members.

(4c) Nails—

(4c1) Use standard ⅜ in. head, 1½ in. galvanized roofing nails for ½ in. thick Insulite.

(4c2) Use 8d common nails for *(¾ in.) (and) (1 in.)* thick Insulite.

(4d) Nailing—First nail Insulite to intermediate framing members and then nail the edges. At all edges space nails 3 in. apart on centers and ⅜ in. away from the edge. On intermediate framing members, space nails 6 in. apart O.C. Drive nails until the heads are slightly below the Insulite surface.

(4e) Painting—

Note: *Painting should be done before battens or wood trim is applied over the Insulite joints. Wherever exposed directly to the weather, the Insulite surface should be sized and painted in accordance with specifications, Section 5, pages 10 and 11.*

(4f) Battens and Wood Trim—Apply battens and wood trim *(as detailed)* over Insulite with nails of sufficient length to pass through the Insulite and penetrate the framing members at least 1 in.

FINISHING INSULITE
STAINING, PAINTING, PAPERING, ETC.

Section . . . 5
MASTER SPECIFICATIONS

Note: *The decorative possibilities of Insulite have been demonstrated in thousands of installations. It is frequently used as interior finish in its natural state. It may be finished with stains, paints, plastic paints, wall coverings, etc. Insulite is a distinctive product, designed to provide high insulating efficiency with decided structural strength—painting and finishing methods entirely satisfactory for plaster or wood surfaces are not necessarily most suitable for Insulite.*

(1) STAINS

Note: *Stains may be used where the natural color of the Insulite is to be modified without destroying the surface texture. Glue stains have been found to give the best results. Alcohol stains are not recommended being found to dry too rapidly leaving unavoidable brush marks and streaks. Following is a satisfactory glue stain:*

Dissolve ½ lb. of flake or ground glue to the gallon of boiling water. After the glue has been thoroughly dissolved, add dry colors in amounts to produce the depth of tone and color required. Stir the dry colors in water to form a thin paste before adding to the glue solution.

Apply the glue stain promptly after preparation, preferably while still warm.

(2) SIZING

Note: *Insulite, except for the application of stains and water paints and certain types of plastic paint, requires a sizing coat.*

Glue Size—Dissolve 1½ to 2 lbs. of chip or flake glue in one quart of boiling water. Then dilute in one gallon of warm water. Brush thoroughly on to the Insulite surface before the size has completely cooled.

(3) OIL OR VARNISH PAINTS

Note: *The Fine surface finish of Insulite is recommended for these finishes. The use of reputable, high grade interior paints is advocated to assure the best results. These may be obtained to*

produce varying degrees of luster, such as gloss, semi-gloss or eggshell and flat. In two coat work, the second coat may be brush stippled, sponge stippled in one or more contrasting tones, or glazed, all accomplished in the standard manner.

Brushing lacquers, bronzing liquids, and other similar finishing materials may be applied to sized Insulite.

(3a) Sizing—Thoroughly size the Insulite surfaces with *(specify glue-size or prepared oil or varnish size, giving brand and manufacturer)*. After size has completely dried, sand the surface lightly.

Note: *See paragraph (2), page 10 for sizing.*

(3b) Painting—Over the sizing apply two coats of *(specify brand and manufacturer)* paint.

Note: *Describe further any particular surface finish.*

(4) WATER EMULSION PAINTS

Note: *If glazed, the Burlap textured surface is advocated, otherwise the Fine surface is recommended. These paints should be applied directly to the unsized Insulite surface. A single coat will give coverage, though two coats are recommended.*

(4a) Painting—Apply *(one) (two)* coats of *(specify brand and manufacturer)* paint. Paint shall be prepared, mixed, and applied in strict accordance with the manufacturer's directions.

(4b) Glazing—

Note: *These paints may also be glazed as are the varnish paints under the following directions:*

Add one (1) quart of spar varnish to the gallon of paste before mixing with water. Apply to the Insulite surface and glaze.

Note: *Describe further the particular glaze and effect desired.*

(5) WATER PAINTS

Note: *Either Burlap or Fine surface may be used dependent on effect. Paints of this class consist of water as a vehicle plus a glue or casein binder and pigment. Ordinary calcimines are of this type. They may be applied directly to unsized Insulite.*

Painting—Apply one (1) coat of *(calcimine) (specify brand and manufacturer of water paint). (Calcimine) (paint)* shall be prepared, mixed, and applied in strict accordance with the manufacturer's directions.

(6) STENCILING

Note: *Decorative stencils may be used to advantage over stains, oil, or varnish paints, and water emulsion paints, or directly over the Insulite.*

Decorative stencils of design and color selected by the architect shall be applied as follows:

Note: *Here list and describe stencils required.*

Stencil colors shall be made of pure Japan color paste thinned to the proper consistency with six (6) parts of turpentine, three (3) parts of linseed oil, to one (1) part of Japan Drier.

(7) PLASTIC PAINTS

Note: *The Fine surface is recommended. Plastic paints are thick paints which, when applied, can be textured by brush or tools to produce various textures. They are divided into two groups—those prepared by the addition of water to a powder and those having a linseed oil base furnished prepared ready for use.*

(7a) Covering Joints—Treat all joints, corners, and re-entrant angles as recommended by the plastic paint manufacturer.

(7b) Applying Plastic Paint—Apply plastic paint *(specify brand and manufacturer)* to all Insulite surfaces. Paint shall be prepared, mixed, and applied in strict accordance with the manufacturer's directions, textured, painted or glazed, tinted as follows:

Note: *Here describe the color tone and surface texture. If more than one type is required, describe, list, and locate each separately.*

(8) WALL COVERINGS

Note: *Use the Fine surface Insulite for applications of wall coverings. Papers with bold patterns are recommended. In addition to wall papers, canvas, fabrics such as Sanitas, leathers, and even thin plywoods and thin metal sheets may be applied. It must be remembered that wood and fiber insulating boards are subject to some slight expansion and contraction, and consequently there is the possibility of a wall covering cracking at the joint. However, the following specifications are the most satisfactory of those which are now in use.*

(8a) Covering Joints—Before applying plastic paint, treat all joints, corners, and re-entrant angles as recommended by the manufacturer.

(8b) Sizing—Thoroughly size the Insulite surfaces with glue-size. After the size has completely dried, sand the surface lightly.

(8c) Wall Covering—

Note: *Here specify the particular wall covering. Wall paper may be applied over a lining paper if desired. If special requirements must be met, follow the manufacturer's standard recommended method of procedure.*

Section . . . 6
MASTER SPECIFICATIONS

INSULITE SOUND INSULATION PARTITIONS AND FLOORS

Insulite between sub and finished floors for sound deadening

Note: *Insulite Lok-Joint Lath and plaster partitions have been found by test to be more resistant to the transmission of sound than ordinary plastered partitions, but for still more satisfactory results the constructions described under this heading should be used. Where sound insulation is required, details to fit the particular construction should be given and specifications formulated along the lines of those suggested in Section 1 to 5 inclusive to fit the particular installation.*

MATERIAL

The material adapted to sound insulation of partitions and floors is Insulite Building Board or Insulite Lok-Joint Lath.

PARTITIONS

For sound insulating partitions Insulite may be used in any one of three ways. One method is to use staggered stud partition with plaster applied directly to the Insulite Lok-Joint Lath. The studs should be 16 in. on center and should be nailed to a 2 x 6 sill. The usual precautions in regard to straightness of studding should be observed.

For the best sound insulating partition between rooms the following construction should be used. 2 x 2 in. studding or 2 x 4 in. stud-

ding set flat should be 12 or 16 inches on center, nailed to a 2 x 6 sill and plate. Insulite Lok-Joint Lath should be nailed to these in accordance with specifications, Section 2, and the lath plastered. A loose layer of Insulite should be placed between the studs. The vertical edge of the loose layer should lap for a distance of 3 or 4 inches. This is not a load-bearing partition.

For tile partitions Insulite should be used between a double tile partition.

CONCRETE STRUCTURAL FLOORS

When a wood floor is to be used, the Insulite is nailed to sleepers 48 in. on center, the space between the sleepers being filled with cinder concrete. The finish floor should be nailed to 1 x 3 furring strips placed across the sleepers 16 in. on center and nailed through the Insulite to the sleepers.

WOOD JOIST FLOORS

Insulite may be laid directly over the rough flooring and the finished flooring nailed to the rough flooring through the Insulite, though a floating floor is recommended in preference. In the floating floor construction 1 x 3 furring strips should be nailed through the Insulite to the sub-floor spaced 16 in. O.C. nailed only at 48 in. intervals—the finished flooring is then nailed to the furring strips in the usual manner.

For superior sound insulation of floors having wood joists, the first layer of Insulite is placed on top of the sub-floor with furring strips over the Insulite and the finish floor nailed to these strips as described above. The ceiling should be supported by independent ceiling joists. These ceiling joists should be bridged to prevent twisting and should be spaced midway between the floor joists. A layer of Insulite Lok-Joint Lath should be nailed to the ceiling joists in accordance with Section 2, and the lath plastered.

ROOF INSULATION SPECIFICATIONS

Introduction—A Guide to Good Practice

Section . . . 7
MASTER SPECIFICATIONS

GENERAL

Roof insulation is customarily furnished and applied by the roofing contractor. Too often his work has to be executed against time and frequently under unfavorable weather conditions. There are, however, certain provisions following which, if clearly set forth in the specifications, enable him to do better and more rapid work and at the same time assure a longer lifed roof to the owner.

Vapor cut-offs, seal courses and water cut-offs are approved for standard practice by the United Roofing Contractors' Association.

VAPOR CUT-OFF

While several types are used, the vapor cut-off consists essentially of a multiple layer of roofing felts or of a particular kind of "rubber" roofing nailed directly over the board deck and mopped over with hot bitumen to receive the insulation. This vapor cut-off, together with the finished roof covering applied over the insulation, sandwiches the insulation between two water and vapor-proof layers.

SEAL COURSE FOR CONCRETE AND SIMILAR DECKS

Buildings with concrete and similar decks present two major problems to the roofer. He is often forced to lay the roofing, including the insulation, before other trades have left the roof in order that plastering and other operations within the building may be completed on scheduled time. Again, he may be called upon to work during inclement weather. Damage under these conditions which may be done to both roofing and insulation may later cause the owner more or less costly replacement. To provide against such contingencies, it is recommended that the specifications provide for the application of a standard seal course which acts as a temporary waterproof covering for the entire roof area.

WATER CUT-OFFS

Provision against damage by sudden showers, over-night and week-end stopping of the insulation and roofing and assurance against spread of leaks from the sometimes seemingly inevitable defects or abuse can be made with properly installed water cut-offs through the body of the insulation. They are standard in good construction.

Their importance is such that it is suggested that the architect indicate with faint lines on the roof plan their desired locations. This assists the roofing contractor in the planning of the roofing operations divided into isolated areas to be completed within certain working hours and serves as a permanent record of their location.

WOOD NAILING STRIPS

Insulation is not a nailing base. Therefore, it is necessary that wood nailing strips be provided on all roof decks to form a permanent, rigid nailing base for the secure attachment of all sheet metal flashing. These strips should be the full thickness of the insulation and should be at least 1 in. wider than the apron of the flashing.

Provide in the specifications under the carpentry division that the general contractor shall furnish and install these nailing strips.

RECOMMENDED NUMBER OF LAYERS

Insulite Roof Insulation is made in various laminated (stapled) thicknesses or plies up to 2 in. thick. It is made with both offset (1 in. shiplapped) and square edge. Where square edged units are used, for the best results the insulation should be laid in two (2) layers, the second breaking joints with the first layer.

BITUMENS AND FELTS

Where coal tar pitch is used, all felts should be impregnated with the same material. Where asphalt pitch is used, use asphalt impregnated felts.

PREFACE TO SPECIFICATIONS

Read "Preface to Specifications" given on page 5 in explanation of form, notes, etc.

Insulite Roof Insulation laid with "Water Cut-Offs"

Section . . . 7A
MASTER SPECIFICATIONS

INSULITE ROOF INSULATION
Over Wood Roof Decks Under Built-Up Roofing

(1) WORK INCLUDED

Note: *List and locate the roof areas to be insulated. If more than one thickness of insulation is required on various roof areas, list and locate each separately.*

(2) INSULATION MATERIAL

Insulation shall be *(homogeneous) (two ply laminated) (stitched) (specify)* thick *(offset) (square)* edge Insulite *(Asphalted)* Roof Insulation as made by The Insulite Company, Minneapolis, Minn., laid in *(one) (two)* layer*(s)*. Boards shall be 24 x 48. All Insulite shall be kept dry before, during and after application.

(3) WOOD NAILING STRIPS

Note: *To provide adequate attachment for miscellaneous sheet metal flashings, such as leader outlets, soil and vent flashings, metal base flashings, eave aprons, gravel stops, etc.*

The General Contractor will provide wood nailing strips to form a nailing base under all sheet metal flashing aprons and flanges of every nature. Strips shall be the full thickness of the insulation and at least 1 in. wider than the apron rigidly secured to the roof construction with nails, lag bolts, expansion bolts, or other means of attachment as best adapted to the particular construction. This contractor shall check all nailing strips and notify the architect in writing of any defects for correction before proceeding with the laying of insulation and roofing.

(4) ROOF DECK

The surface of the roof deck shall be broomed clean, free from dirt, loose material, and thoroughly dry. All loose or springy boards shall be properly nailed before insulation is laid.

(5) BUILDING PAPER

Note: *Use this clause only in case the insulation is laid in one (1) layer.*

The entire roof area shall be covered with two (2) plies (lapped half) rosin sized building paper or 6 lb. coated felt. Nail sufficiently to hold in place until the insulation is laid over it.

Note: *Include (5) for insulation against heat loss only. Omit where high humidities are maintained.*

Insulite Roof Insulation over Wood Roof Deck

(6) VAPOR CUT-OFF

Over the wood roof deck lay two (2) plies (lapped half) of light weight (34 lbs. per square) asphalt prepared roofing having one side coated. Lay coated side down. Nail the back edge of each sheet with tin-capped, galvanized, barbed roofing nails spaced 12 in. O.C. All laps shall be mopped back 12 in. with hot asphalt. Do not mop over this membrane until just prior to the laying of insulation.

Note: *Include (6) only where high humidities are maintained.*

(7) APPLICATION OF INSULATION

(7a) General—Only as much Insulite shall be laid over the roof area as can be covered by the finished roofing in any one day.

Lay the Insulite in *(one) (two)* layer*(s)* over the entire roof area. Adjoining edges of the boards shall be brought to a moderate contact but shall not be forced into place. Where the roof meets vertical surfaces, such as parapets, penthouses, etc., the boards shall be cut in a neat, workmanlike manner to insure proper joining without forcing. Boards shall be laid in parallel courses with end joints in each course breaking with those of adjoining courses.

(7b) Mopping the Vapor Cut-Off— Mop the exposed vapor cut-off felt liberally with hot *(coal tar pitch) (asphalt)*. Only sufficient area to provide complete embedment of each Insulite board shall be mopped at a time.

Note: *Include (7b) only where high humidities are maintained.*

(7c) Two Layer Insulation

(7c1) Where insulation is laid in two (2) layers, the boards of the second layer shall be laid parallel with those of the first layer, and the joints of the second layer shall break joints with those of the first layer.

Nailing of two (2) layer insulation shall be through the second or top layer only. (Do not nail the first layer.)

Note: *Include (7c1) for insulation against heat loss only. Omit where high humidities are maintained.*

(7c2) Where insulation is laid in two (2) layers, the boards of the second layer shall be laid parallel with those of the first layer, and the joints of the second layer shall break joints with those of the first layer.

Mop the exposed surface of the first layer liberally (at least 25 lbs. per square) with hot *(coal tar pitch) (asphalt)*. Only sufficient area to provide complete embedment of each Insulite board shall be mopped at a time.

Embed each board of the second layer firmly in the bituminous mopping.

Note: *Include (7c2) only where high humidities are maintained.*

(7d) Water Cut-Offs—

Note: *Advocated to prevent the spread of water beyond predetermined isolated areas in the event of leaks due to damage to the roofing or defective flashings, parapet walls, copings, etc.*

The insulation, whether laid in one (1) or two (2) layers, shall be cut to the line designated for the water cut-off.

Water cut-offs shall consist of strips of *(coal tar pitch) (asphalt)* saturated roofing felt 8 to 10 in. wide stuck in bitumen to the roof, carried over the edge of the insulation, and turned over and stuck in bitumen to the top surface of the insulation.

They shall be located approximately 24 in. from and parallel to all vertical walls, such as parapets, penthouses, skylight curbs, etc., and around all leader heads, soil pipes, vents, ventilators, etc. The body or field of the roof shall be divided into rectangular areas approximately 30 ft. on a side, each area isolated with a water cut-off. Insert a water cut-off surrounding each day's work if the stop is not made at the designated water cut-off.

At least one (1) ply of the finished roofing shall be mopped to the water cut-off each night.

(7e) Nails—Nails shall be of sufficient length to pass through the insulation and penetrate the wood roof deck at least 1 in.

Note: *Include (7e) for insulation against heat loss only. Omit where high humidities are maintained.*

(7d) Nailing—Space nails 12 in. apart O.C. Each board shall be secured in place by nailing along each edge and staggered along the longitudinal center line.

Note: *Include (7f) for insulation against heat loss only. Omit where high humidities are maintained.*

(8) APPLICATION OF ROOFING

The exposed surface of the Insulite Roof Insulation shall receive a poured coat of hot *(coal tar pitch) (asphalt)* squeegeed or broomed to about 1/16 in. thickness. Into this poured coat, while hot, the roofing felts shall be embedded.

Note: *The above in lieu of the ordinary mopping is advocated. Roofing shall be applied in accordance with the manufacturer's specifications as selected by the architect.*

INSULITE ROOF INSULATION Over Roof Decks of Monolithic Concrete or Gypsum or Roof Decks of Unit Tile Construction Under Built-up Roofing or Promenade Tile

Section . . . 7B
MASTER SPECIFICATIONS

(1) WORK INCLUDED

Note: *Same as Master Specification 7A, page 13.*

(2) INSULATION MATERIAL

Note: *Same as Master Specification 7A, page 13.*

(3) WOOD NAILING STRIPS

Note: *Same as Master Specification 7A, page 13.*

Note: *Omit this clause if finished roofing is of Promenade Tile.*

(4) ROOF DECK

(4a) General—The surface of the roof deck shall be reasonably smooth without depressions, broomed clean free from dirt and loose material and thoroughly dry.

(4b) Unit Tile Construction—The joints of all tiles shall be properly pointed up.

Note: *Include (4b) where deck is of cement, gypsum, book, or similar tile construction.*

(4c) Under Promenade Tile Roofing—

Note: *Slope for proper drainage may be provided in either of the two following methods: The first is preferable.*

(4c1) The roof slab shall be formed flat and the drainage slopes built up over the Insulite Roof Insulation with the finished promenade tile roofing and its mortar bed.

(4c2) The roof slab shall be formed graded to all outlets with cement mortar fill before the seal course and the Insulate Roof Insulation is laid.

(5) SEAL COURSE

Note: *Recommended on all insulated roof decks, other than wood, to afford protection from rain, snow and ice that the insulation and finished roofing may be applied under favorable weather conditions and only after all other trades have left the roof.*

(5a) Priming the Deck—Prime the deck with asphalt roofing primer.

Note: *Include priming if asphalt mopping and asphalt felt are used for seal course. If coal tar pitch and felt are used, no primer is necessary.*

(5b) Mopping the Deck—*(Mop the entire roof area) (Spot or strip mop the individual tiles or units)* with a coat of hot *(coal tar pitch) (asphalt).*

Note: *If the deck is monolithic construction (concrete, poured gypsum), the mopping shall be continuous. If the deck is of precast units (book tile, precast gypsum, concrete), spot or strip mop the individual units.*

(5c) Laying the Seal Course—Over the mopping while hot, lay one (1) layer of 14 lb. *(coal tar pitch) (asphalt)* saturated roofing felt with 2 in. laps. Turn the felt up 4 in. against all walls and vertical surfaces and stick with pitch and provide temporary thimbles at all leader heads, etc., to the end that the roof will be reasonably watertight against rain and melting snow. Do not mop over this membrane until just prior to the laying of insulation.

(6) APPLICATION OF INSULATION

(6a) Mopping the Seal Course—Mop the exposed seal course felt liberally with hot *(coal tar pitch) (asphalt).* Only sufficient area to provide complete embedment of each Insulite board shall be mopped at a time.

(6b) General—

Note: *Same as (7a) General, Master Specification 7A, page 13.*

(6c) Two Layer Insulation—Where insulation is laid in two (2) layers, the boards of the second layer shall be laid parallel with those of the first layer, and the joints of the second layer shall break joints with those of the first layer.

Mop the exposed surface of the first layer liberally (at least 25 lbs. per square) with hot *(coal tar pitch) (asphalt).* Only sufficient area to provide complete embedment of each Insulite board shall be mopped at a time.

Embed each board of the second layer firmly in the bituminous mopping.

(6d) Water Cut-Offs—

Note: *Same as (7d) Water Cut-Offs, Master Specification 7A, page 13.*

(7) APPLICATION OF ROOFING

Note: *Same as Master Specification 7A above.*

Insulite Roof Insulation over Concrete Roof Deck

Section . . . 7C
MASTER SPECIFICATIONS

INSULITE ROOF INSULATION
Over Steel Roof Decks Under Built-up Roofing

(1) WORK INCLUDED

Note: *Same as Master Specification 7A, page 13.*

(2) INSULATION MATERIAL

Note: *Same as Master Specification 7A, page 13.*

(3) WOOD NAILING STRIPS

Note: *Same as Master Specification 7A, page 13.*

(4) ROOF DECK

The steel deck shall be securely anchored to the roof purlins and all joints shall be made rigid.

5)) SEAL COURSE

Note: *Include this seal course if the rooms beneath the roof carry high manufactured or incidental humidities. Do not use coal tar pitch mopping on steel decks.*

(5a) Mopping the Deck—Mop the entire roof area with a coat of hot asphalt.

(5b) Laying the Seal Course—Over the mopping, while hot, lay one (1) layer of 14 lb. asphalt saturated roofing felt with 2 in. laps. Turn the felt up 4 in. against all walls and vertical surfaces and stick with pitch and provide temporary thimbles at all leader heads, etc. to the end that the roof will be reasonably watertight against rain and melting snow. Do not mop over this membrane until just prior to the laying of insulation.

(6) APPLICATION OF INSULATION

(6a) Mopping the (*Seal Course*) (*Steel (Deck*)—Mop the exposed *(seal course felt) (steel deck)* with hot asphalt. Only sufficient area to provide complete embedment of each Insulite board shall be mopped at a time.

Note: *Do not use coal tar pitch mopping on steel decks.*

(6b) General—

Note: *Same as (7a) General, Master Specification 7A, page 13.*

(6c) Two Layer Insulation—Where insulation is laid in two (2) layers, the boards of the second layer shall be laid parallel with those of the first layer, and the joints of the second layer shall break joints with those of the first layer.

Mop the exposed surface of the first layer liberally (at least 25 lbs. per square) with hot asphalt. Only sufficient area to provide complete embedment of each Insulite board shall be mopped at a time.

Embed each board of the second layer firmly in the bituminous mopping.

(6d) For Steep Decks—In addition to the mopping, each Insulite board shall be secured to the steel deck with three (3) bolts along the top.

(6e) Water Cut-Offs—

Note: *Same as (7d) Water Cut-Offs, Master Specification 7A, page 13.*

(7) APPLICATION OF ROOFING

Note: *Same as Master Specification 7A, page 14.*

Insulite Roof Insulation over Steel Roof Deck

Cold Storage Insulation—See page 16

INSULITE COLD STORAGE INSULATION

Note: *For physical characteristics, see page 2. For description, dimensions, etc., see page 3.*

Note: *The maintenance of high thermal insulating efficiency in all types of cold storage construction is entirely dependent on quality workmanship and strict adherence to specifications.*

(1) WORK INCLUDED

Note: *Here list and locate definitely the floor, wall, and ceiling areas to be insulated. If more than one thickness is used, list separately and the respective locations or areas.*

(2) PREPARATION OF SURFACES

All surfaces to be insulated shall be clean, dry, smooth, and free from grease or paint. Level rough surfaces with waterproofed Portland cement plaster or asphalt mastic. Allow Portland cement plaster to dry thoroughly before applying insulation.

(3) MATERIAL

Insulation shall be Insulite *(Sealdslab) (Cold Storage)* Insulation as made by The Insulite Company, Minneapolis, Minn. Units shall be *(specify)* thick *(as designated in paragraph 1)* x 6, 9, 12, 18, 24 in. x 36 in.; 12, 18, 24 in. x 18 in.; 24 x 24 in.; 12, 24 in. x 48 in. as best adapted to the particular area to be insulated.

(4) CUTTING

All cutting and fitting shall be done in a neat, workmanlike manner. Cutting shall be done with a fine tooth sharp saw using rapid strokes and a minimum of pressure.

(5) APPLICATION

(5a) Dipping—All Insulite Cold Storage Insulation units shall, immediately prior to their application, be dipped in hot or emulsified asphalt.

Note: *Advocated irrespective of added coats of asphalt applied after units are erected. Successive coatings of waterproofing are much more effective barriers to infiltration of air and moisture than thick single coatings for the reason that air pockets and bubbles occurring in one coat are sealed up by the next.*

(5b) Floors—Concrete—Cover the concrete surface with a heavy coating of hot or emulsified asphalt in which immediately firmly embed the dipped insulation units. Only sufficient areas of sub-floor shall be coated at a time as can immediately be covered with the insulation. Successive layers of insulation shall each be given a heavy surfacing of asphalt with all joints covered. Units shall be laid in parallel rows butted tight with end joints in successive rows staggered. Break joints in successive courses over those previously laid.

Note: *Following the top covering of asphalt may be laid a reinforced concrete wearing floor either integrally or surface waterproofed. Finished floor should be at least 2 in. thick.*

(5c) Floors—Wood—Floors shall be free from loose boards, large cracks or knot holes.

Over the wood flooring lay one (1) thickness of asphalt saturated felt, lapping each sheet seventeen inches over the preceding one and nail securely in place.

Cover the felt with a heavy coating of hot or emulsified asphalt in which immediately firmly embed the dipped insulation units.

Note: *Continue specification as given in (5b) above.*

(5d) Structural Masonry Walls—Cover the masonry wall surface with a heavy coating of hot or emulsified asphalt against which immediately firmly embed the dipped insulation units. Only sufficient areas of wall shall be coated at a time as can immediately be covered with the insulation. Successive layers of insulation shall each be given a heavy surfacing of asphalt. The final coat shall be a thick asphalt mastic troweled on in accordance with the manufacturer's specifications. Units shall be laid in parallel courses butted tight with end joints in successive courses staggered. Break joints in successive layers over those previously laid.

(5e) Ceilings—Existing Concrete Structures—Kiln-dried preservative-treated straight wood strips the same thickness as the insulation and spaced apart accurately 18 or 24 in. to take the insulation unit shall be secured to the ceiling with expansion screws set in holes drilled into the concrete. Coat the ceiling and wood strips with a heavy coat of hot or emulsified asphalt. Only sufficient area of ceiling shall be coated at a time as can immediately be covered with the insulation. Set the first thickness of insulation units against the concrete between the wood strips firmly embedded in the asphalt coat and butted tight and in addition toenail the insulation units to the wood strips. Successive layers of insulation shall each be given a heavy surfacing of asphalt and nailed to the wood strips.

The final coat shall be a thick asphalt mastic troweled on in accordance with the manufacturer's specifications. Successive layers of insulation shall be laid over the first layer breaking joints, each unit substantially secured to the preceding layer with special galvanized wire nails of proper length driven at an angle.

(5f) Ceiling—New Concrete Structures—Provide beveled strips of kiln-dried preservative-treated lumber set 16 in. O.C. on the concrete forms to form a secure nailing base for the second series of wood strips.

Note: *Specify same as in (5e) except that wood strips shall be securely nailed to beveled strips above specified instead of with expansion screws set in the concrete.*

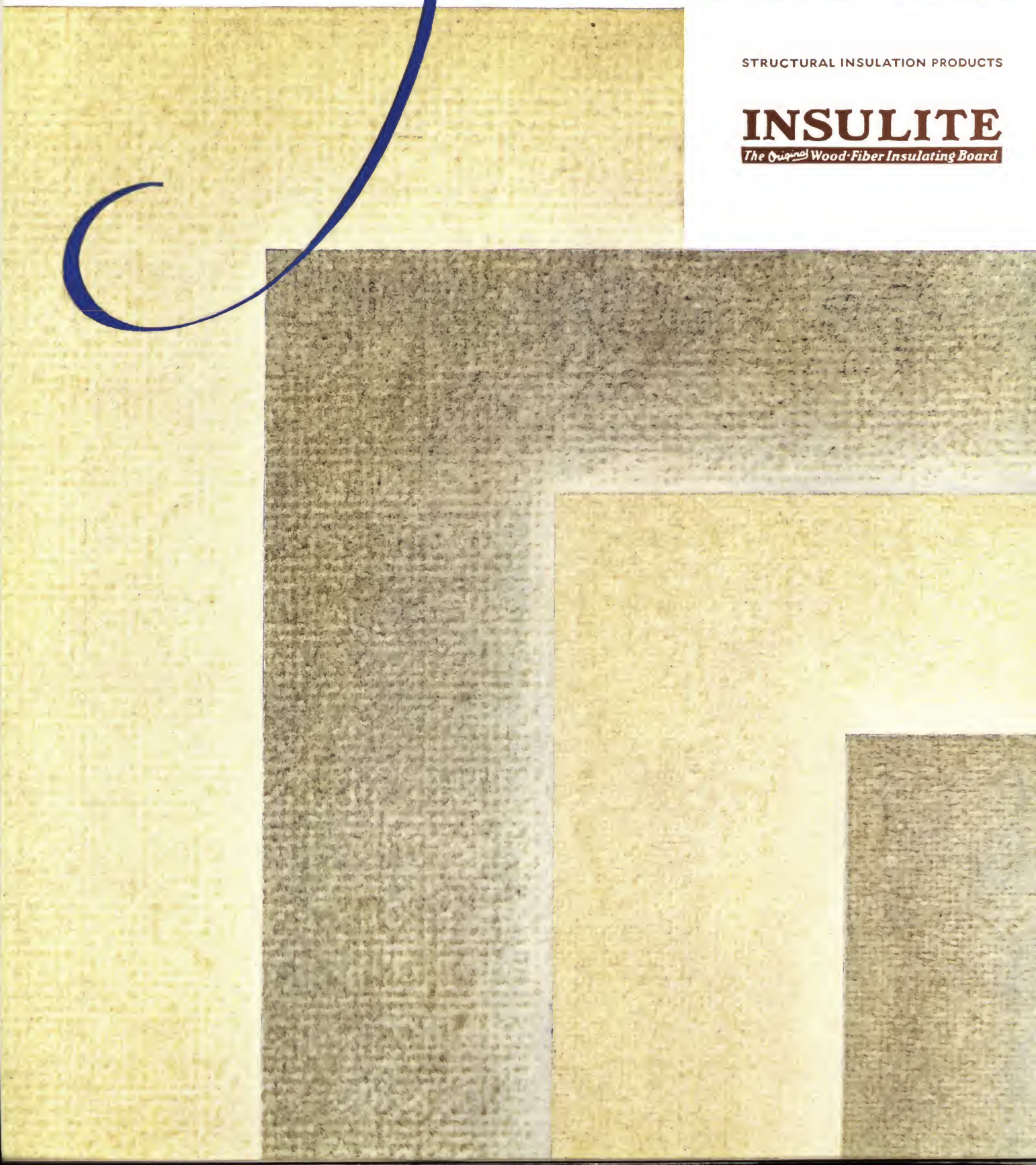
Insulite Sealdslab in Beer Storage Cellar

Insulite

STRUCTURAL INSULATION PRODUCTS

INSULITE

The Original Wood-Fiber Insulating Board



THE PLASTERGON WALL BOARD COMPANY

Manufacturers of Quality Wood Fibre Wall Boards Since 1911

BUFFALO, NEW YORK

CHICAGO OFFICE: 1817 McCormick Building; 332 So. Michigan Ave. TELEPHONE, Wabash 1060

NEW YORK OFFICE: 7901-15 Seventy-First Ave., Glendale, L. I., N. Y TELEPHONE, Juniper 5-3050

Distributors in All Principal Cities, Strategically Located, so as to Insure Delivery to Most Points within 24 Hours After Receipt of Orders

FIBRE WALL BOARDS

PLASTERGON (PEBBLED).
PERFECT-O-CELL (PEBBLED).
PLASTERGON TILE.

"THE QUALITY BOARD"
"PLASTERGON" WOOD-FIBRE WALL-BOARD

MAMMOTH ¼ IN.
ECONOMY.
EMERALD.

Plastergon Wall Boards—Manufactured from long, tough wood fibres, scientifically treated, so as to minimize expansion and contraction. The tough, long fibres are subjected, in the manufacturing process, to pressure under high compression rolls, adding tremendous strength to the product.

After leaving the laminating machine, the large light weight panels are then kiln dried and surface sized, two most important operations which add to the long life and durability of the product.

Perfect-O-Cell and Plastergon Wall Board—Have a beautiful pebbled surface which lends itself readily to artistic decoration.

Economy Wall Board—Cream colored and smooth on both sides.

Emerald Wall Board—Smooth both sides, cream colored on one surface and green on the other.

Plastergon Tile—This tiled board has an extra smooth surface with deep indentations, in the square design 4x4 in., and when enameled, resembles the glistening beauty of ceramic tile at one-tenth the cost. Plastergon Tile will not chip or crack like ceramic or Keene cement.

Mammoth Wall Board—Board is ¼-in. thickness. The ideal wall board where added strength is desired.

Plastergon Fibre Wall Board—Products are manufactured in 32 and 48-in. widths, in standard lengths of 6 to 16 ft., with the exception of Plastergon Tile Board which is manufactured only in the 48-in. width, and are approximately $\frac{3}{16}$ in. in thickness, except Mammoth, which is ¼ in.

INSULATION

Evenaire Insulating Board

EVENAIRE INSULATING BOARD

Evenaire is manufactured from new spruce wood fibre, not reworked or waste material. It is first waterproofed and finally scientifically fabricated into a rugged insulating board, light in weight, having great structural strength and furnishing high insulating efficiency. The felting or weaving together of these long wood fibres builds into the panel countless numbers of microscopic "dead-air" cells, thus retarding the passage of heat, cold, and sound. Evenaire combines high insulation value with structural strength. Evenaire is cream colored, with a finished texture that has utility in addition to its attractiveness.

The thermal conductivity of Evenaire Insulating Board has been established as 0.325 B.t.u.'s per hour per square foot per degree Fahrenheit per inch thickness.

The tensile strength of Evenaire is approximately 280 lbs. per sq. in., which is nearly three times the minimum requirement and considerably above the average. Evenaire used in the construction of buildings, as sheathing, adds greatly to the structural strength of the buildings.

Evenaire is available in panels ½ in. thick, 4 ft. wide and 6, 7, 8, 9, 10 and 12 ft. long. Evenaire Lath, 18 in. wide and 4 ft. long, is an ideal plaster base adding additional structural strength to the building in addition to its high insulating value.

Plastergon Foil Insulating Board

Plastergon Foil Insulating Board is approximately $\frac{3}{16}$ in. thick, manufactured in 32 and 48-in. widths, standard lengths 6 to 16 ft. Its heat reflective aluminum foil surface assures the maximum in insulating value at an economical price.

Write THE PLASTERGON WALL BOARD COMPANY, *Buffalo, N. Y., for Samples and Descriptive Literature*

JOHNS-MANVILLE

EXECUTIVE OFFICES
22 East 40th Street, NEW YORK, N. Y.
Member of The Producers' Council, Inc.

Products

JOHNS-MANVILLE INSULATING BOARD, INSULATING LATH, DECORATIVE INSULATING BOARD, HARD BOARD and PANLBOARD.

For the following Johns-Manville products, see File Index: Acoustical Treatment and Sound Isolation; Asbestos and Asphalt Shingles; Built-up Roofs; Roof Insulation; Home Insulation; Pipe Coverings and Insulations; Tile Flooring; Transite, Flat and Corrugated Sheets; Asbestos Wainscoting and Asbestos Flexboard.

JOHNS-MANVILLE INSULATING BOARD PRODUCTS

Johns-Manville furnishes not only standard Insulating Board and Insulating Lath for use as sheathing and plaster base, but also a wide choice of Decorative insulating board and hard board products.

J-M Insulating Board

Johns-Manville Insulating Board is a knotless, grainless, all-wood fibre board that possesses great strength. Because it is made in large units and is so easily applied, it simplifies the construction, modernization and decoration of all types of interiors.

The natural color of J-M Insulating Board is a pleasing buff that harmonizes with practically any decorative scheme. The various surface textures suggest the interesting feeling of wall fabrics. For this reason, as well as for economy, it is often applied without paint or other finish. Where special effects are desired, it can be painted or stained to suit. It will also receive ordinary or plastic paints and certain plaster substitutes. It yields readily to cutting with beveling tools, and can be decorated in this manner on the job. Joints may be beveled, or concealed with battens. For unbroken surfaces, joints may be covered with painters' cloth, and the whole area painted.

J-M Insulating Board Makes a Strong, Warm Exterior Sheathing Under Wood Siding, Stucco or Brick Veneer

Insulating Board, used as sheathing under wood siding, stucco or masonry veneer, and as a lining for attics, porches and basements, greatly simplifies the job of sheathing or finishing any building. Because it is made in sheets 4 ft. wide and in convenient lengths up to 12 ft., it enables workmen to cover large areas in one-third the time ordinarily taken by wood sheathing.

An Attractive Basement Room

The modern effect of this basement room has been achieved by the use of beveled panels of Insulating Board

Besides substantially reducing labor costs, J-M Insulating Board insulates the home against heat and cold.

J-M Batten Strips

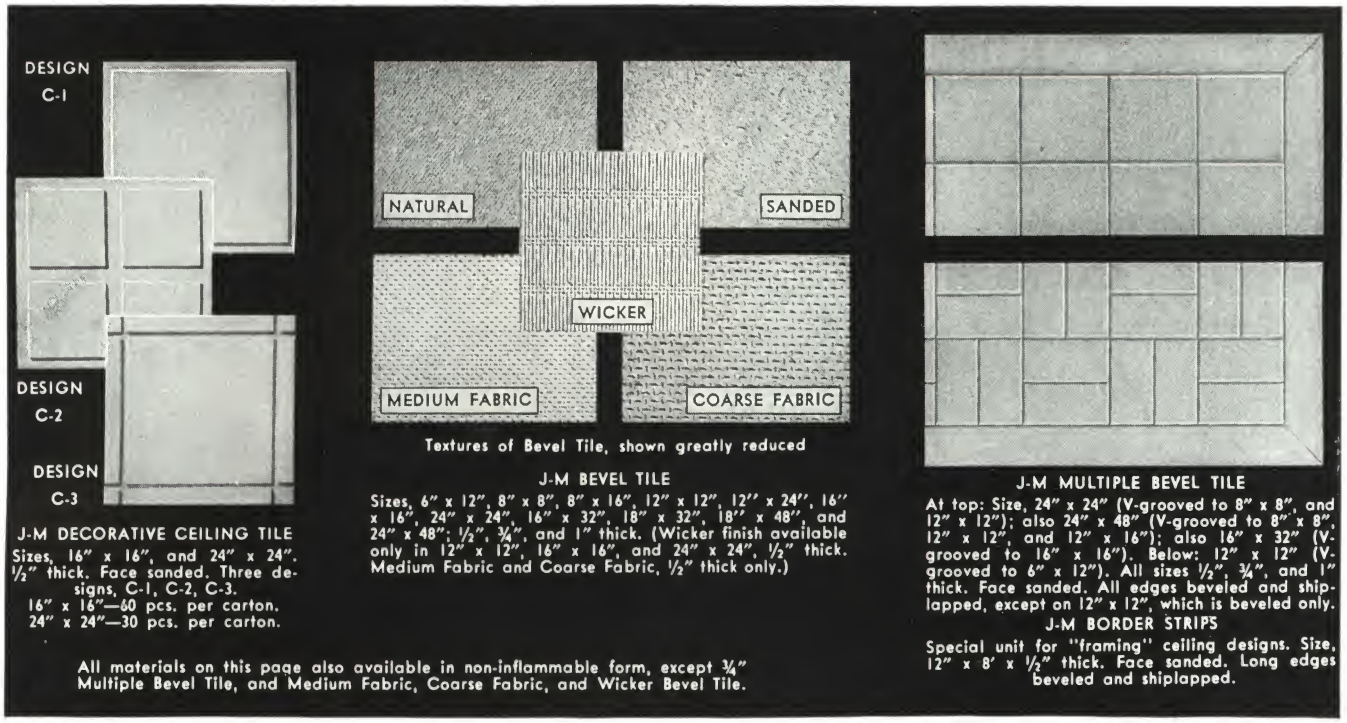
Batten strips of beveled and sanded Insulating Board are available in 2, 2½ and 3-in. widths, in lengths of 8, 9, 10 and 12 ft., for paneling with sheets of Insulating Board.

J-M Rigid Roofinsul

J-M Rigid Roofinsul is the same material as Insulating Board but furnished 24x48 in., in thicknesses of ½ in. or multiples thereof. It is described in detail elsewhere in connection with Johns-Manville Built-up Roofs.

J-M Insulating Lath

J-M Insulating Lath is the same material as Insulating Board, except that it is furnished 18x48 in., with long edges shiplapped, and all face edges beveled. It is applied with the "gridded" surface exposed. Plaster bonds to it with a strength far greater than the key of plaster on wood lath. J-M Insulating Lath makes a solid, unbroken surface which prevents unsightly lath marks and also results in a saving in plaster and labor.



J-M DECORATIVE CEILING TILE
Sizes, 16" x 16", and 24" x 24". ½" thick. Face sanded. Three designs, C-1, C-2, C-3.
16" x 16"—60 pcs. per carton.
24" x 24"—30 pcs. per carton.

Textures of Bevel Tile, shown greatly reduced

J-M BEVEL TILE
Sizes, 6" x 12", 8" x 8", 8" x 16", 12" x 12", 12" x 24", 16" x 16", 24" x 24", 16" x 32", 18" x 32", 18" x 48", and 24" x 48"; ½", ¾", and 1" thick. (Wicker finish available only in 12" x 12", 16" x 16", and 24" x 24", ½" thick. Medium Fabric and Coarse Fabric, ½" thick only.)

J-M MULTIPLE BEVEL TILE
At top: Size, 24" x 24" (V-grooved to 8" x 8", and 12" x 12"); also 24" x 48" (V-grooved to 8" x 8", 12" x 12", and 12" x 16"); also 16" x 32" (V-grooved to 16" x 16"). Below: 12" x 12" (V-grooved to 6" x 12"). All sizes ½", ¾", and 1" thick. Face sanded. All edges beveled and shiplapped, except on 12" x 12", which is beveled only.

J-M BORDER STRIPS
Special unit for "framing" ceiling designs. Size, 12" x 8' x ½" thick. Face sanded. Long edges beveled and shiplapped.

All materials on this page also available in non-inflammable form, except ¾" Multiple Bevel Tile, and Medium Fabric, Coarse Fabric, and Wicker Bevel Tile.

J-M DECORATIVE INSULATING BOARD

Bevel Tile, Multiple Bevel Tile, Bevel Plank (Regular and Beaded), Ashlar Strips, Wainscoting Panels

The decorative forms of J-M Insulating Board include many attractive designs: Bevel Tile, Multiple Bevel Tile—which gives similar effects in larger units, two random plank forms—Bevel Plank, which resembles wooden plank with beveled edges, and Beaded Bevel Plank, which has grooves on each side of the joints, Ashlar Strips and Wainscoting Panels. For details, see the illustrations of each on this and the following page, and paragraphs on page 4.

Among the most popular is Bevel Tile, which is made in a wide variety of finishes and sizes. With these tile, it is possible to create any number of interesting wall or ceiling treatments. There are five attractive textures available: Natural, Sanded, Medium Fabric, Coarse Fabric and Wicker. The edges of all these styles of tile are beveled and ship-lapped with the exception of the 6x12 in. size and excepting the Wicker finish. Some suggested designs are shown on the next page.

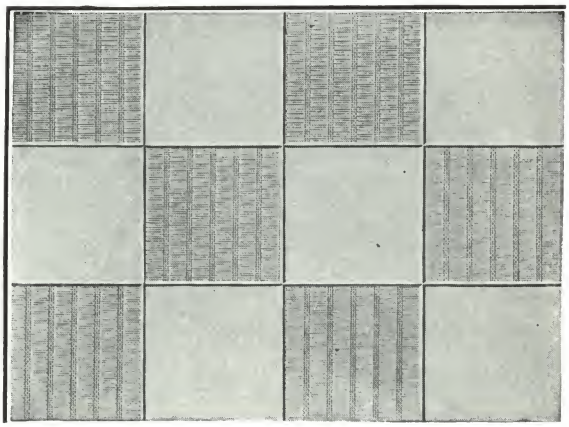
J-M BEVEL PLANK (Plain)
J-M BEVEL PLANK (Beaded)
Sizes, 6, 8, 10, and 12" wide x 8, 10, and 12' long. ½" thick. (16" width on special order.) Face sanded. Diagonal bevel joints on long edges. Furnished as follows: 8', 72 sq. ft. per carton; 10', 90 sq. ft. per carton; 12', 108 sq. ft. per carton. Beaded style illustrated with special cap cut from standard material.

J-M ASHLAR STRIPS
Size, 6" x 4'. Thickness, ½". Face sanded. Diagonal bevel joints. 36 pieces, 72 sq. ft. per carton.

J-M WAINSCOTING PANELS
Size, 18" wide x 4' high by ½" thick. Face sanded. Diagonal bevel joints. 12 pieces, 72 sq. ft. per carton.

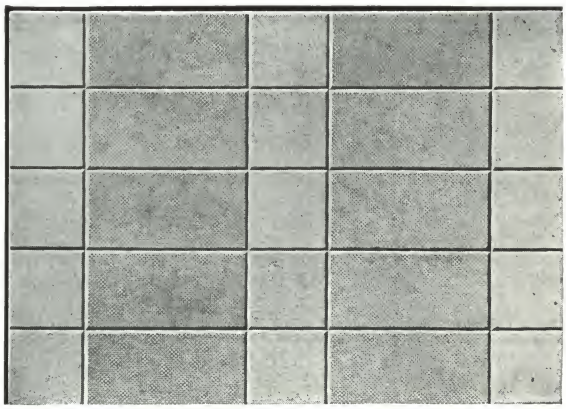
All materials on this page also available in non-inflammable form, except ¾" thick material.

TYPICAL CEILING DESIGNS WITH J-M BEVEL TILE

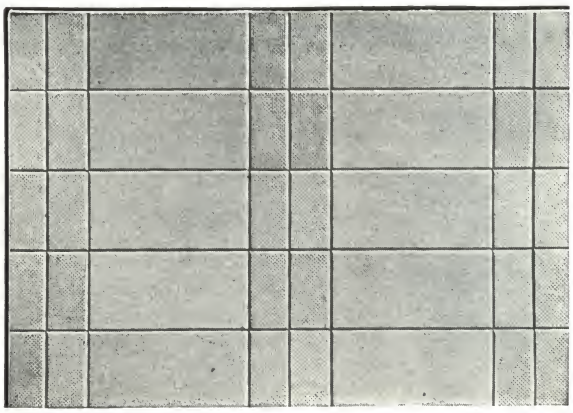


Alternating 12x12-in. Squares of Wicker and Sanded in a Checkerboard Design

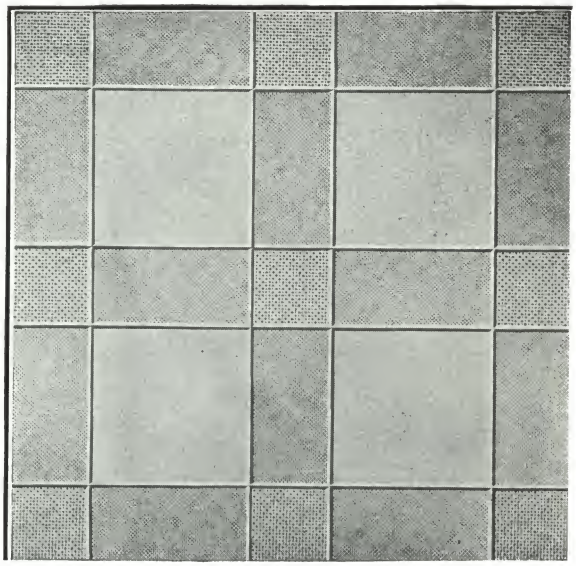
16x16-in. Natural Finish and 8x16-in. Medium Fabric in a Basket Weave Design



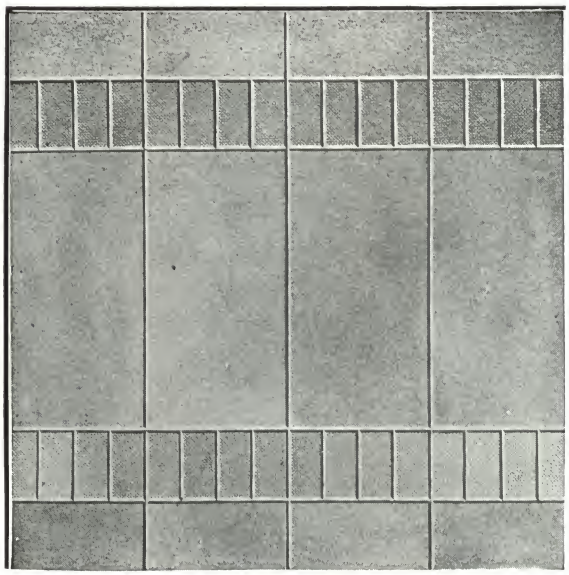
Alternating Rows of 12x12-in. Sanded and 12x24-in. Medium Fabric



Double Row of 6x12-in. Medium Fabric Separated by 12x24-in. Sanded



24x24-in. Sanded, 12x24-in. Medium Fabric, 12x12-in. Coarse, in a Plaid Design



6x12-in. Units of Medium Fabric Between 24x48-in. Sanded. Specially Adaptable to Large Ceilings

J-M DECORATIVE INSULATING BOARD (continued)

Multiple Bevel Tile—To supply ready-made wall and ceiling designs, Johns-Manville has developed the Multiple Bevel Tile, which is Insulating Board in large sheets, already beveled into attractive patterns. Additional effects may be secured by cutting bevels, grooves and special designs in standard Insulating Board sheets.

Decorative Ceiling Tile—*(Illustrated on page 2.)* Furnished in three tile designs, C-1, C-2 and C-3, all in the natural, light cream color.

Bevel Plank, Regular and Beaded—Used for the entire wall or for wainscoting. Furnished in natural color in random widths and three lengths for economical application.

Ashlar Strips—Produce the popular "stone" or ashlar design in a fast-laying strip form, 6 in. high and 4 ft. long.

Wainscoting Panels—Furnished in natural color, with an attractive, raised panel design. *(See illustration on page 2.)*

Border Strips—For use in "framing" ceiling designs, as illustrated with Multiple Bevel Tile on page 2, are available in long pieces in natural color.

Decorative Board Mouldings, Cap and Base—Supplied in 8 ft. lengths, a 2½ in. cap and 5 in. base, designed to provide a finish for the various wall treatments. The cap may be used alone or in combination with the base, where a wider cap is desired.

In This Attractive Dining Room J-M Insulating Board Has Been Used for Walls, Ceiling and Decorative Trim

These J-M Decorative Insulating Board products are suitable not only for permanent installations but also for temporary uses such as window backgrounds and displays.

JOHNS-MANVILLE HARD BOARD AND PANLBOARD

J-M Hard Board

J-M Hard Board is a grainless, knotless, all-wood fibre board, so strong that it is used for lining concrete forms, and yet so decorative in color and finish that it is used as wall treatment in the finest homes. Its hard glossy surface is highly resistant to abrasion and wear; it has a tensile strength of approximately 3500 lbs. per sq. in. Its high resistance to moisture makes it adaptable for innumerable outdoor uses. It will not warp, crack, split or splinter and works easily with ordinary carpenter's tools.

Tempered Hard Board—Standard J-M Hard Board impregnated with a special compound and baked. The tempered material is recommended where an even harder, stronger, more moisture resistant board is desired. For fine scroll work or intricate machining, Tempered Hard Board works to even a cleaner edge than the standard material.

Color—J-M Hard Board is a pleasing brown in color. It has a natural hue and finish which are ideal for interior decorative purposes without further treatment.

Either type of board may be painted, stained, varnished or waxed, if desired. Tempered Hard Board requires no priming coat.

Uses—Among the practically countless uses for J-M Hard Board are the following: paneling, partitions, shelving, window displays, store counters, folding screens and table tops.

Sizes—J-M Hard Board and Tempered Hard Board are furnished in ⅛ in. and $\frac{3}{16}$ in. thicknesses, in sheets 4 ft. wide x 1, 2, 3, 4, 6, 8, 9, 10, and 12 ft. long; also in ¼ and $\frac{5}{16}$ in. thicknesses, in sheets 4 ft. wide x 12 ft. long.

Tempered Hard Board is also available, in ⅛ in. thickness only, in 4x12 ft. sheets scored in 4 in. squares.

J-M Standard and DeLuxe PanLboard

For uses where the exceptional strength and density of Hard Board are not required, Johns-Manville supplies two economical boards, known as Standard and DeLuxe PanLboard.

PanLboard—A dense, tough sheet material with a hard and attractive surface, a rich brown in color, and especially suited for use as a wall or ceiling finish.

De Luxe PanLboard—Is an even tougher, denser product than PanLboard though not as dense as J-M Hard Board.

Both types are furnished ¼ in. thick only, 4 ft. wide x 1, 2, 3, 4, 6, 8, 9, 10, and 12 ft. long.

How an Old Basement Can Be Refinished with J-M Products

J-M Bevel Plank on walls and J-M Insulating Board on ceilings; J-M Hard Board for the face of the bar and a J-M Asphalt Tile Floor

Genuine

MASONITE

STRUCTURAL INSULATION

INSULATING LATH—QUARTRBOARD

PRESDWOOD—TEMPRTILE

1936

MASONITE *Corporation*

111 *W. Washington Street,* CHICAGO, ILLINOIS

MASONITE Corporation

111 W. Washington Street, CHICAGO—ILLINOIS.

PRODUCTS

MASONITE STRUCTURAL INSULATION MASONITE INSULATING LATH MASONITE TEMPRTILE
MASONITE CUSHIONED FLOORING MASONITE QUARTRBOARD MASONITE DE LUXE
QUARTRBOARD MASONITE PRESDWOOD, 1/10 in., 1/8 in., 3/16 in., 1/4 in., 5/16 in. THICKNESSES
MASONITE TEMPERED PRESDWOOD, SAME THICKNESSES

MASONITE INSULATION

Its Manufacture and Adaptability

Masonite products are manufactured boards made entirely of wood fibre. They possess the natural strength and composition of wood but are without grain and other defects found in wood.

In the production of these scientific wood products, clean wood chips are exploded under high pressure steam so that the wood is reduced to fibre. The product thus produced consists entirely of lignocellulose fibres, their strength unimpaired, and the lignin or natural cement structure of the wood entirely retained. No chemicals are used, and the exploding process is purely a physical one, so that there is no change in the wood except tearing it apart into natural fibers.

These fibers are refined, felted and pressed in flat bed heated hydraulic presses into board form. No binder is added, the natural cementing matter or lignin of the wood being used to bond the fibers together. Pressure is applied hydraulically until the required degree of density is obtained, the heat of the platens in the presses driving off all of the moisture. It is possible, therefore, to fabricate Masonite products in various degrees of density and thickness, suiting the formation to the service the board is to perform.

Insulation Values

The thermal conductivities of Masonite products have been determined by Professor J. C. Peebles of Armour Institute of Technology, using the hot plate method of test, expressing the results in B.t.u. per inch of thickness, per square foot, per degree Fahrenheit difference, per hour.

MASONITE Structural Insulation	.328 B.t.u.
Quartrboard	.55 B.t.u.
Presdwood	6.20 B.t.u.

Where to Use MASONITE Products

Only the most common uses of Masonite products are discussed in the following pages, the more unusual ones being reserved for special bulletins. Probably the most common use of Masonite Structural Insulation is sheathing for frame, brick, stone, or stucco exterior walls. It replaces other materials without increase in cost, combining high insulation value and structural strength into one material.

Labor costs are reduced by the increased rapidity and ease with which the big, uniform boards go into place. Also waste is cut to the irreducible minimum.

This same product is furnished as a base for plaster. It is furnished in sizes 12 in., 18 in., or 24 in. x 48 in. Masonite Insulating Lath is furnished in bundles of 100 square feet, and is shiplapped along both 4 ft. edges. Applied in staggered arrangement, it makes an exceedingly strong, rigid base. The plaster bond is greater than 1000 pounds per square foot of surface.

Masonite Insulation products are highly resistant to moisture. Tests made by the Robert W. Hunt Company for water absorption where the samples were completely immersed in water report 2.59% by volume at the end of four hours, 7.16% at the end of 24 hours, and 15.8% at the end of 72 hours. Shrinking and swelling of these products are practically negligible.

The surface and color of these Masonite products make them particularly suitable for use as interior finish. They are smooth with just enough texture and mottling to provide an interesting surface. These products may be left in their natural state or may be given many types of finish, a few of which are covered in the following pages. Being true wood products, they possess permanence and a look of permanence that is quite uncommon in partitions constructed of somewhat similar products.

COCKTAIL BAR, BOOK-CADILLAC, HOTEL—DETROIT

Masonite Insulation is also used to reduce heat losses through roofs of homes or larger buildings. It may be applied under or over wood rafters, concrete, wood, gypsum, or steel decks. Special sizes suitable for this application are available.

On another page there is presented a chart giving exact figures of heat losses in a few of the different types of roofs, showing how these heat losses may be reduced and brought under control. Also, the quantity of Insulation required to prevent condensation.

Where Masonite Insulation is used on walls, ceilings, and floors, it has another important function along with its structural and heat insulation values. It is an invaluable material for the control of sound. With the increasing demand for soundproof construction, it is especially interesting to note that the use of Masonite provides excellent results with little additional cost.

Testing the reduction of sound intensity through different (standard) types of partitions, Dr. Paul E. Sabine of Riverbank Laboratories, Geneva, Illinois, found that a 4-in. clay tile plastered partition weighing 28 pounds per square foot had a reduction of 34 decibels, while through a partition of Masonite Insulation on wood studs plastered, the weight was 17 pounds per square foot, and the reduction was 35.1 decibels.

COCKTAIL BAR, BOOK-CADILLAC HOTEL—DETROIT WALLS PRESDWOOD PAINTED CANARY, CHROMIUM STRIPS ON JOINTS BLACK CARPET AND DRAPERIES

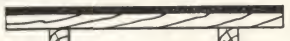
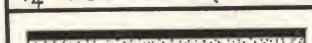
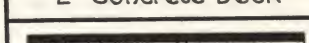
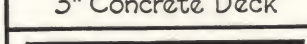
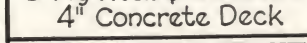
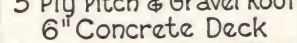
Masonite Insulation also has an unusually high rating as a sound absorbent material. Tests made by the official laboratory of the Acoustical Materials Association on material purchased from lumber dealers' stocks report the unusually high efficiency of this material in the following chart:

FREQUENCY	128	256	512	1024	2048	NOISE REDUCTION COEFFICIENT
Standard Masonite Insulation 24 in. O.C.	.20	.46	.33	.37	.37	.40
Standard Masonite Insulation 16 in. O.C.	.28	.42	.40	.32	.43	.40

HEAT LOSSES

THROUGH VARIOUS ROOF CONSTRUCTIONS

—INSULATED and UNINSULATED—

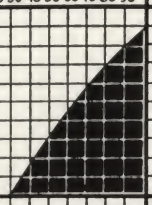
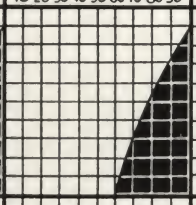
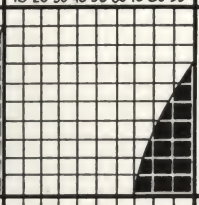
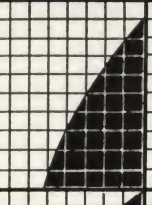
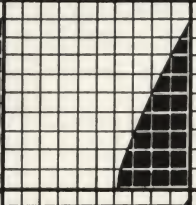
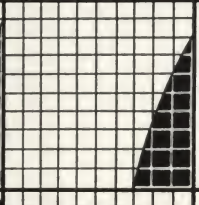
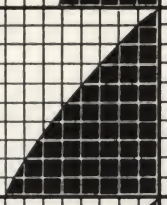
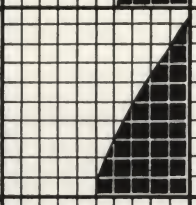
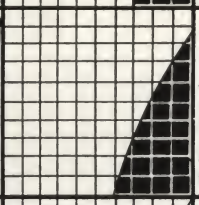
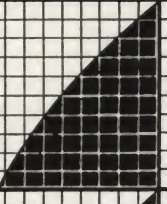
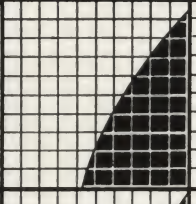
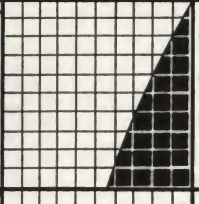
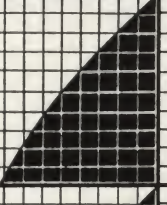
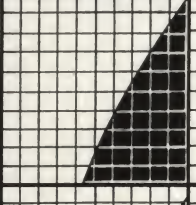
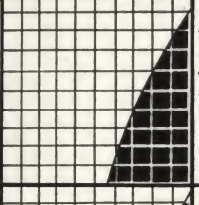
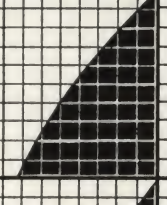
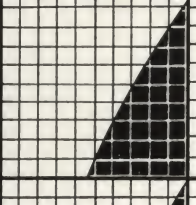
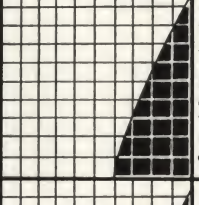
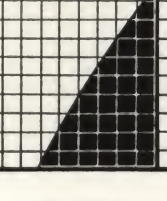
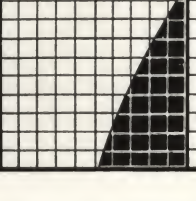
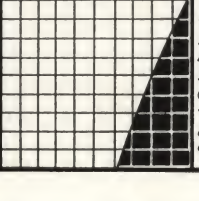
TYPE OF ROOF INSULATION Reference to this heat loss chart will show at a glance that a five-ply pitch and gravel roof with a ⅞-in. wood deck will lose a coal value of 6.79 tons per thousand feet of area in one heating season, when exposed to an average difference in temperature of 40° and uninsulated. The same roof, insulated with one layer of Masonite, loses only 3.92 tons during one heating season.		Conductivity -K-	Percent Saving Due To Insulation	Sq. Ft. of Radiation Required Per 1000 Sq. Ft. Roof Area For 10° Difference In Temperature Multiply Amount Shown By Diff. in Temp / 10		Heat Losses In Tons Of Coal Per 1000 Sq. Ft. Of Roof Area, Per 210 Days At Differences Of Temperature Shown. Calculations Are Based On Average Heating Value Of Coal 12000 B.T.U. And Furnace Efficiency Of 60%. Temperature Difference — F									
				Steam	H. Water	10°	20°	30°	40°	50	60°	70°	80°	90°	100°
 5 Ply Pitch & Gravel Roof ⅞" Wood Deck (Soft Wood)	None	.485		20.02	30.32	1.70	3.39	5.10	6.79	8.50	10.19	11.89	13.58	15.27	17.00
	One Layer MASONITE	.280	42%	11.67	17.50	.98	1.96	2.94	3.92	4.90	5.87	6.84	7.83	8.82	9.80
	Two Layers MASONITE	.196	60%	8.16	12.50	.68	1.37	2.06	2.74	3.43	4.12	4.79	5.48	6.15	6.85
 5 Ply Pitch & Gravel Roof 1¾" Wood Deck (Soft Wood)	None	.345		14.37	21.57	1.20	2.40	3.62	4.83	6.04	7.24	8.45	9.65	10.85	12.05
	One Layer MASONITE	.226	35%	9.42	14.22	.79	1.58	2.37	3.16	3.96	4.75	5.54	6.33	7.12	7.92
	Two Layers MASONITE	.168	51%	7.00	10.50	.59	1.17	1.76	2.35	2.94	3.52	4.12	4.70	5.29	5.88
 5 Ply Pitch & Gravel Roof 2" Concrete Deck	None	.658		27.40	41.13	2.31	4.61	6.90	9.22	11.50	13.81	16.11	18.41	20.72	23.06
	One Layer MASONITE	.330	50%	13.75	20.61	1.15	2.30	3.45	4.61	5.75	6.90	8.05	9.20	10.36	11.53
	Two Layers MASONITE	220	67%	9.16	13.75	.77	1.54	2.30	3.08	3.84	4.61	5.37	6.14	6.92	7.70
 5 Ply Pitch & Gravel Roof 3" Concrete Deck	None	.610		25.40	38.17	2.13	4.27	6.40	8.54	10.68	12.81	14.95	17.10	19.20	21.35
	One Layer MASONITE	.317	48%	13.21	19.80	1.11	2.22	3.32	4.43	5.54	6.65	7.75	8.86	9.97	11.08
	Two Layers MASONITE	.214	65%	8.92	13.38	.75	1.50	2.24	2.99	3.74	4.50	5.24	5.99	6.74	7.49
 5 Ply Pitch & Gravel Roof 4" Concrete Deck	None	.568		23.65	35.75	1.99	3.98	5.96	7.95	9.94	11.92	13.90	15.89	17.88	19.86
	One Layer MASONITE	.306	46%	12.75	19.13	1.07	2.14	3.21	4.28	5.35	6.42	7.49	8.56	9.63	10.72
	Two Layers MASONITE	.209	63%	8.71	13.08	.73	1.46	2.19	2.92	3.65	4.38	5.11	5.84	6.57	7.32
 5 Ply Pitch & Gravel Roof 6" Concrete Deck	None	.500		20.81	31.25	1.75	3.50	5.25	7.00	8.75	10.50	12.25	14.00	15.75	17.50
	One Layer MASONITE	.285	43%	11.88	17.82	.99	1.98	2.97	3.96	4.95	5.94	6.93	7.92	8.91	9.90
	Two Layers MASONITE	.199	60%	8.29	12.45	.70	1.40	2.10	2.80	3.50	4.20	4.90	5.60	6.30	7.00
 5 Ply Pitch & Gravel Roof 2"Concrete 6"Hollow Tile	None	.495		20.62	30.95	1.73	3.46	5.19	6.92	8.65	10.38	12.11	13.84	15.57	17.30
	One Layer MASONITE	.292	41%	12.15	18.25	1.02	2.04	3.06	4 08	5.10	6.12	7.14	8.16	9.18	10.20
	Two Layers MASONITE	.207	58%	8.62	12.93	.72	1.44	2.16	2.88	3.60	4.32	5.04	5.76	6.48	7.20

CONDENSATION CHART

The following example will explain the condensation chart. On a roof of five-ply pitch and gravel type, condensation starts at a relative humidity of 50% when the difference in temperature is 70° and the roof is uninsulated. Insulated with one layer of Masonite, the same roof under the same conditions would show no condensation up to a humidity of 70%, while two layers of Masonite would resist humidity up to 80%.

CHART SHOWING WHETHER OR NOT CONDENSATION WILL FORM ON BOTTOM OF DECK

Black Indicates Danger Of Condensation
White Indicates No Condensation

TYPE OF ROOF	Uninsulated — Percent Relative Humidity 10 20 30 40 50 60 70 80 90	With One Layer Of MASONITE — Percent Relative Humidity 10 20 30 40 50 60 70 80 90	With Two Layers Of MASONITE — Percent Relative Humidity 10 20 30 40 50 60 70 80 90	Temperature Difference 10 20 30 40 50 60 70 80 90
5 Ply Pitch & Gravel Roof $\frac{7}{8}$" Wood Deck (Soft Wood)				Temperature Difference
5 Ply Pitch & Gravel Roof $1\frac{3}{4}$" Wood Deck (Soft Wood)				Temperature Difference
5 Ply Pitch & Gravel Roof 2" Concrete Deck				Temperature Difference
5 Ply Pitch & Gravel Roof 3" Concrete Deck				Temperature Difference
5 Ply Pitch & Gravel Roof 4" Concrete Deck				Temperature Difference
5 Ply Pitch & Gravel Roof 6" Concrete Deck				Temperature Difference
5 Ply Pitch & Gravel Roof 2" Concrete 6" Hollow Tile				Temperature Difference

APPLICATION SPECIFICATIONS

MATERIAL

Material shall be Masonite Structural Insulation ½ in. thick, Masonite Quartrboard ¼ in. thick, Masonite DeLuxe Quartrboard ¼ in. thick manufactured in 4 ft. widths by 5, 6, 7, 8, 9, 10, and 12 ft. in length; Masonite Insulating Lath ½ in. thick by 18 x 48 in., 24 x 48 in.; Masonite Roof Insulation 22 x 47 in. as manufactured by the Masonite Corporation, Chicago, Illinois.

FRAMING

Studs, joists, sills, and plates shall be framed as in ordinary frame construction, spaced accurately 12 or 16 in. O.C. Insert 2 x 4 headers to provide bearing for end joints, as all edges must be supported, particularly behind chair rails. On roofs provide suitable pieces for nailing base at the ends of all rafters, ridges, hips, valleys, etc.

THE FORMER PLUNDER ROOM OWES ITS ATTRACTIVENESS TO MARIETTA CHAIR COMPANY AND MASONITE, WITH ITS PRESDWOOD INTERIOR FINISH AND FURNITURE. HACKETT'S IS NOW THE MOST POPULAR SPOT IN TOWN

Note: No extra cross bracing other than commonly used is required. Fire stops and wind bracing are recommended. If required, so specify.

APPLICATION

Masonite boards shall be applied with the long dimension parallel with and directly to the studding, rafters, or joists, except when Lath is used, allowing ample bearing surface for nailing on all edges. Horizontal joint shall only be made over framed headers. Boards shall be spaced 3-16 in. apart at sides, top and bottom except when used for interior finish, when they should be brought to moderate contact. Do not force boards into place. Around window and door frames and where tight joints are required, bring Masonite boards to moderate contact. Where standard frames are used, nail a 3 in. wide strip of the Masonite board to build up back of outside window and door casings. Cut Masonite boards to fit snugly around rafters that project beyond the face of studs.

PLUNDER ROOM IN REAR OF HACKETT'S COCKTAIL ROOM, MARIETTA, OHIO. MASONITE CORPORATION AND MARIETTA CHAIR COMPANY PLANNED A DIFFERENT FUTURE FOR THIS SPACE

Masonite Insulating Lath boards shall be applied at right angles to the rafters, studding, joists, or furring strips. End joinst shall be staggered and centered over framing. Ship-lapped edges shall be fitted to moderate contact. Space ends ⅛ in. apart.

NAILING

Beginning in the center, nail Masonite boards first to intermediate supports, and then entirely around all edges with the exception of lath boards. Where Masonite Structural Insulation is used for sheathing purposes, use 1½ in. galvanized barbed roofing nails, with not less than ⅜ in. head, spaced approximately 6 in. apart through the body of the board, 3 in. apart and ⅜ in. in around the edges.

Masonite Insulating Lath should be applied with 4d box nails or No. 13 gauge 5-16 in. head blued plaster board nails, spacing nails approximately 4 in. apart, ⅜ in. in on the ends.

Where Masonite boards are used for interior finish, a 4d casing head nail should be used, spaced approximately 4 in. apart and driven at a 30 degree angle. Set nails neatly below the surface of the boards.

Masonite Structural Insulation used as a base for wall paper, canvas, plastic paint, etc. should be applied with 4d box nails or 13 gauge 5-16 in. blued fibre board nails, spaced approximately 6 in. apart through the body of the board and 4 in. apart ⅜ in. in from the edges. Set nail heads slightly below the surface with a ball head hammer.

MASONITE ROOF INSULATION OVER WOOD DECKS

Fasten Insulation to deck with nails of sufficient length to extend at least 1 in. into the wood, spaced 10 to 11 in. along each edge and staggered along the longitudinal center line. Nail two layers of Insulation through the top layer only.

BARBARA ANN TEA ROOM, READING, PA. INSULATION LEFT NATURAL FINISH AND SCORED TO GIVE EFFECT OF BOARD OF RANDOM WIDTH

MASONITE STRUCTURAL INSULATION AS SHEATHING UNDER SIDING, SHINGLES, STUCCO, BRICK, OR STONE VENEER

Note: See Figures 1, 2, and 3, page 10.

MATERIAL

Note: See Application Specifications page 5.

FRAMING

Note: See Application Specifications, page 5.

APPLICATION

Note: See Application Specifications, page 5.

NAILING

Note: See Application Specifications, pages 5 and 6.

WOOD SIDING

Apply wood siding directly over Insulation, nailing through to studs. Joints in siding shall butt on center of studs.

SHINGLE WALLS

Furring strips of 1 x 2 lumber, spaced to the proper shingle weathering shall be applied horizontally over the Insulation and nailed through into the studs. Shingles shall be secured to furring strips in accordance with the manufacturer's specifications.

STUCCO FINISH

Preparatory to application of stucco, cover Insulation with asphalt coated waterproof paper. Then apply approved stucco base nailing through to the studs. Flash over the head casings of all windows and doors with metal. No stucco shall be applied direct to Masonite Insulation on the exterior surfaces. Stucco shall be applied in accordance with the stucco manufacturer's specifications.

BRICK OR STONE VENEER

Shelf angles, for the support of lintels, etc., and metal wall ties or anchors shall be nailed through Masonite Insulation into studs only. Do not nail between studs. Lay masonry veneer with not less than ½ in. space between Insulation and brick or stone.

MASONITE INSULATING LATH AS PLASTER BASE

Note: See Figures 4 and 5, page 10.

MATERIAL

Note: See Application Specifications, page 5.

FRAMING

Note: See Application Specifications, page 5.

APPLICATION

Note: See Application Specifications, page 5.

NAILING

Note: See Application Specifications, pages 5 and 6.

Masonite Insulating Lath As Plaster Base

(Continued)

All re-entrant angles shall be protected with metal lath corner-right or strips of wire screen cloth from floor to ceiling, and where side walls meet ceiling; also where wood joins masonry construction. The metal lath or wire screen cloth shall be nailed through Masonite into the studs. The center joint of all room ceilings shall be covered with a piece of rib lath, cut so the rib covers center of the joint. Allow a portion of the expanded lath to extend on each side. Rooms over 16 ft. in width shall have two additional strips, spaced midway between the center strip and wall. All strips shall run the long way of the room.

WILMINGTON Y. M. C. A., BOYS' GAME ROOM. MASONITE ONE-HALF INCH INSULATION USED ON CEILING AND LEFT NATURAL

Provide full ½ in. grounds, nailed securely through the Masonite Insulating Lath to the framing.

Reinforce all outside corners with standard metal corner bead. Nail all reinforcing securely through the Lath into the framing.

PLASTER

Standard Gypsum Cement Plaster or gypsum wood fibred plaster shall be used for scratch, or scratch and brown coats. Over this apply standard finish as desired. Apply plaster to full ½ in. finished thickness.

Provide adequate ventilation for the proper drying of the plaster and sufficient heat where necessary to prevent damage by frost. Plaster should set in about 1½ hours and not to exceed 2 hours.

The plasterer shall use the darby in the direction of the studding, rafters, joists, or furring strips, and it shall be of sufficient length to span two or more supports.

Note: Do not wet Masonite Insulating Lath before applying plaster. Lime plaster is not recommended.

MASONITE STRUCTURAL INSULATION—MASONITE BEVELLED TILE—MASONITE BEVELLED PLANK—MASONITE QUARTRBOARD—MASONITE DE LUXE QUARTRBOARD AS AN INTERIOR FINISH

Note: See Figures 6 and 9, pages 10 and 11.

MATERIAL

Note: See Application Specification age 5.

FRAMING

Note: See Application Specifications, page 5.

APPLICATION

Note: See Application Specifications, page 5.

NAILING

Note: See Application Specifications, pages 5 and 6.

SPECIAL FRAMING

Space framing as may be necessary to meet layout of interior finish but not over 12 or 16 in. O.C. Use straight lumber of uniform thickness. Fur masonry walls similarly with 1 x 2 strips skimmed to a true level plane.

FINISHING

Apply battens and trim over Insulation with nails of sufficient length to pass through the Insulation and at least 1 in. into the framing members. If boards are to be painted, the painting should precede application of battens and trim.

Where called for, edges of the boards shall be bevelled or rounded and the surface shall be V grooved or carved before boards are applied.

All joints shall be centered over framing members.

Where the combination cementing and nailing is desired in installing bevelled tile or bevelled plank over a continuous backing, either of wood or plaster, cover the entire back of the tile or plank with a waterproof alcohol base adhesive. Exercise care to prevent adhesive from appearing on the exposed surface. Slide the units into place and nail in position with two nails at each corner and additional nails 5 in. O.C. for large units. Set nail heads neatly below the surface.

PAINTING AND DECORATING

Masonite boards may be left in their pleasing natural color and finish or may be painted or enameled. Before painting or enameling, the boards should be well sized with a special fibre board size.

Note: Most of the leading paint manufacturers make an approved sizing material for this purpose.

STAINS

Use a glue stain made by dissolving ¾ of a pound of flake or ground glue and a pint of cold water; then dilute with one gallon of boiling water, and add dry color mixed with water and stirred to a thin paste in amounts depending upon tone desired. Apply while still warm.

WATER EMULSION PAINTS AND CALCIMINES

Apply calcimines or casein emulsion paints of either paste or powder type directly to unsized Insulation. A single coat will give good coverage, although two coats are recommended.

STENCILING

Fasten stencils into position pinned or by hand in the brackets, and brush colors ground in Japan through stencil into Insulation. The Japan color as purchased should be thinned with a mixture consisting of six parts turpentine, three parts linseed oil and one part Japan Dryer.

MASONITE INSULATION AND PRESDWOOD MOULDING STRIPS USED AS PANELING IN NEW OFFICE BUILDING OF THE THELMANY PULP & PAPER CO., KAUKAUNA, WISCONSIN

MASONITE STRUCTURAL INSULATION OR MASONITE QUARTRBOARD AS BASE FOR PLASTIC PAINTS, CANVAS, OR WALL PAPER

MATERIAL

Note: See Application Specifications, page 5.

FRAMING

Note: See Application Specifications, page 5.

APPLICATION

Note: See Application Specifications, page 5.

NAILING

Note: See Application Specifications, pages 5 and 6.

JOINT CONSTRUCTION

Sand the Masonite boards for a width of about 3 in. each way from the joint, using a block of wood and No. 1 sandpaper. Over each joint apply a 2 in. strip of buckram tape firmly imbedding it in the Swedish putty that has been applied to the joint to receive it. Bring the tape into intimate contact with the board, feather-edging the Swedish putty along each side of the tape for approximately 1 in. to prevent the edges of the tape from showing through the finished surface. The surface of the tape should be made as smooth as possible, using a painter's scraping tool or pointing trowel. After initial application, allow to stand until the joint is thoroughly dry, and smooth up any uneven spots with a second application of Swedish putty. Allow this to dry and smooth using a wood block and No. 0 sandpaper.

In preparing the joint for the application of plastic paint, plastic paint may be used in the joint construction in place of the Swedish putty.

At the time the joint construction is prepared the nail heads should also be covered with Swedish putty or plastic paint to produce a smooth surface and sanded lightly on drying.

After the joint construction is thoroughly dry, the entire wall should be given a coat of paper hanger's size and allowed to dry before papering or applying canvas.

FORMULA AND DIRECTIONS FOR MIXING SWEDISH PUTTY—2 lbs. Casein Glue (Casco Water-proof Glue)—½ gallon water—5 lbs. Bolted Whiting—½ pint lead and oil ready mixed outside paint, light color—½ pint Spar varnish.

Do not mix in brass, copper, or aluminum vessel Use iron, galvanized iron, tin, enamelware, glass, china, clay, or wood receptacles. Use only clean receptacles and clean cold water. NEVER USE HOT WATER.

Stir the 2 lbs. of Casein Glue slowly into the ½ gallon of cold water, stirring for approximately ten minutes. Allow this mixture to stand for thirty minutes. Mix again for three minutes; then stir in slowly the five lbs. of Bolted Whiting. Then add the ½ pint of outside paint and the ½ pint of Spar varnish.

Note: Sizing is not necessary before the application of plastic paint.

CORNER CONSTRUCTION

A strip of wire screen cloth or metal cloth bent to a right angle shall be inserted in all around angles and bonded in place with Swedish putty or plastic paint in a similar manner to that specified for joint construction.

MASONITE ROOF INSULATION OVER WOOD, CONCRETE, GYPSUM AND STEEL DECKS

Note: See Figures 11 and 12, page 11.

MATERIAL

Note: See Application Specifications, page 5.

NAILING

Note: See Application Specifications, pages 5 and 6.

Keep Insulation and roof dry before, during, and after application. Before laying Insulation, clean roof deck surface. Properly nail springy boards and cover wide cracks and knot holes.

In cases involving high humidities and condensation, treat deck with a two-ply vapor Seal Course, consisting of two layers of 14-lb. saturated felt, half-lapped and mopped back at least 12 in. Extend and turn up Seal Courses to form a water cut-off along all roof edges and vertical surfaces. Then apply Insulation, wrapping Vapor Cut-off extension around edges and mopping down 4 in. to 6 in. on top of Insulation.

PRIVATE OFFICE. WALLS OF QUARTRBOARD. FLOORS OF TEMPERED PRESDWOOD

Apply only as much Insulation in one day as can be covered by the finished roofing. At the end of each day's work, turn down roofing felt over exposed edge of Insulation and mop securely so seal need not be broken upon resumption of work. Bring adjoining edges of Insulation to moderate contact. Where roof meets vertical surfaces, fit Insulation to insure proper joining without forcing. Apply single layer Insulation with end joints staggered. Apply multiple layer Insulation with long edges of Insulation and succeeding layers parallel to those of the first layer, breaking all joints in successive layers. Where the pitch or slope of the roof exceeds 3 in. to the ft., anchor Insulation to the deck with nails, screws, expansion bolts, or steel darts. With hot asphalt or pitch, mop only sufficient area at a time to provide complete imbedment for a single Insulation unit. Imbed Insulation firmly while the mastic is still hot. Where two or more layers are to be applied in hot asphalt or pitch, similarly mop the exposed surface of the preceding layer and securely imbed the successive layer therein.

Install cant strips around all edges where decks join vertical surfaces.

WOOD DECK DRIP COURSE

If Insulation is to be applied in a single layer, provide a drip course of rosin sized paper or saturated felt.

WOOD DECK VAPOR SEAL COURSE

Over wood deck apply a layer of coated building paper, lapped 2 in. at joints and nail it sufficiently to hold in position. Then lay two plies half-lapped saturated felt with 6 in. turned up extensions along vertical surfaces and over the cant strips. Nail back edge of each sheet with tin capped galvanized barbed roofing nails spaced 1 in. on center. Mop back all laps 12 in. Mop exposed vapor cut-off liberally with hot asphalt or pitch, using not less than 30 lbs. per 100 sq. ft., and imbed Insulation securely therein.

CONCRETE OR POURED GYPSUM ROOFS

Prepare monolithic gypsum or concrete decks with a liberal coating of waterproof primer, using not less than one gallon of primer for each 100 sq. ft. of surface. Mop deck liberally with hot pitch or asphalt, using not less than 30 lbs. per 100 sq. ft., and imbed Insulation securely therein.

UNIT TILE ROOFS

Properly point up the joints of all tiles where asphalt is used, mop the entire deck, and imbed Insulation therein. Where coal tar pitch is used, spot mop tile units keeping all moppings back 4 in. from the tile joints and securely imbed Insulation therein.

STEEL ROOF DECKS AND VAPOR SEAL COURSE

Inspection shall be made to see that the steek deck is free from grease, oil, and dirt and all sharp angles are rounded so as to avoid rough, sharp edges. Lay a strip of roofing felt 6 in. wide uncemented over expansion joints at ridge. Mop roof with hot asphalt (do not use pitch on steel decks), imbedding two plies half-lapped 14 lb. asphalt saturated felt with 6 in. turned up over cant strip extending along vertical surfaces. Mop exposed vapor cut-off liberally with hot asphalt, using not less than 30 lbs. per 100 sq. ft., and imbed Insulation securely therein. Over wood or steel rafters, under slate tile or asbestos shingles, apply Masonite Structural Insulation in sizes 4 x 5, 6, 7, 8, 9, 10, and 12 ft., attaching the Insulation to the rafters sufficiently to hold the boards in place until the wood sheathing is applied over the Insulation. Over the wood sheathing a waterproof membrane roof should be applied before laying the shingles.

MASONITE CONSTRUCTION DETAILS

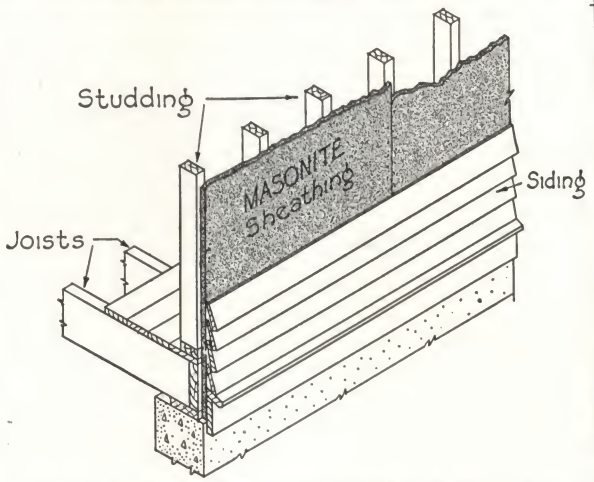


FIG. 1 FRAME CONSTRUCTION

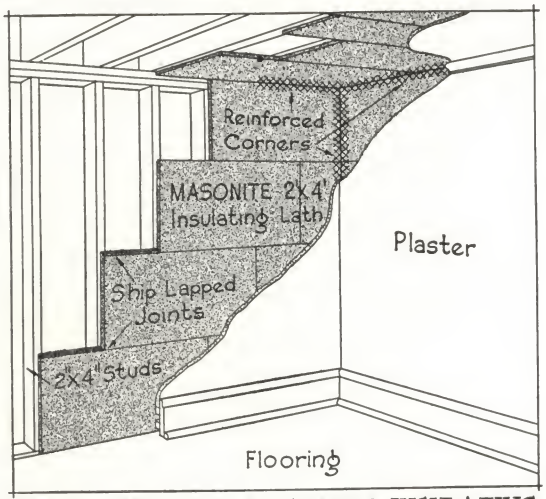


FIG. 4 SHOWING MASONITE INSULATING LATH USED AS PLASTER BASE

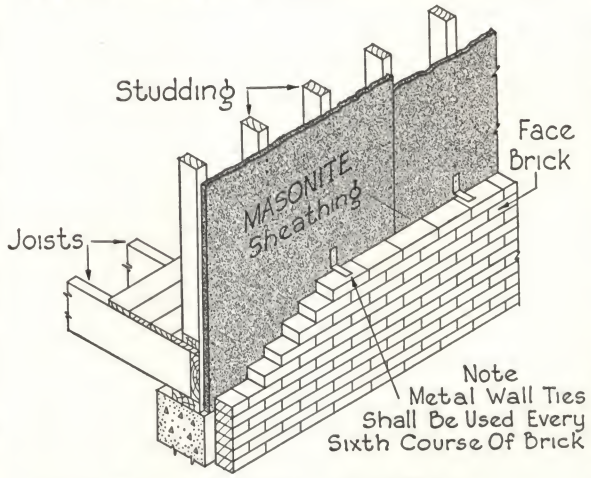


FIG. 2 BRICK VENEER

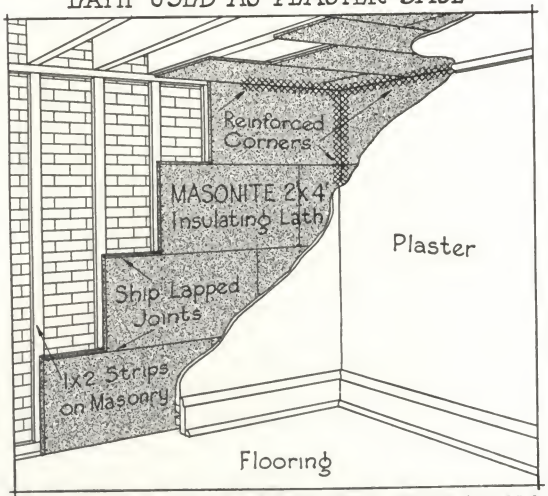


FIG. 5 SHOWING MASONITE INSULATING LATH USED AS PLASTER BASE ON MASONRY

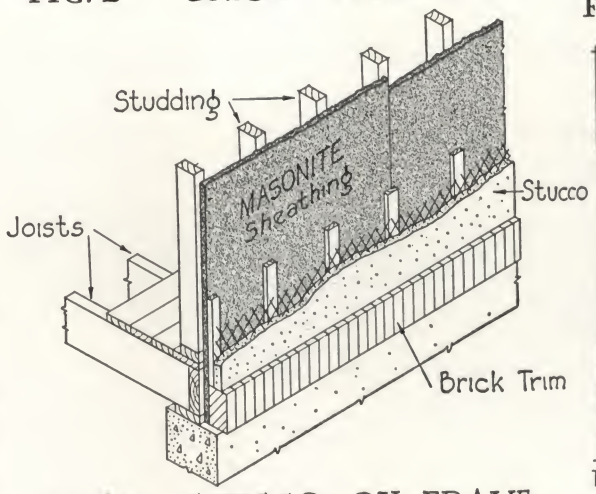


FIG. 3 STUCCO ON FRAME

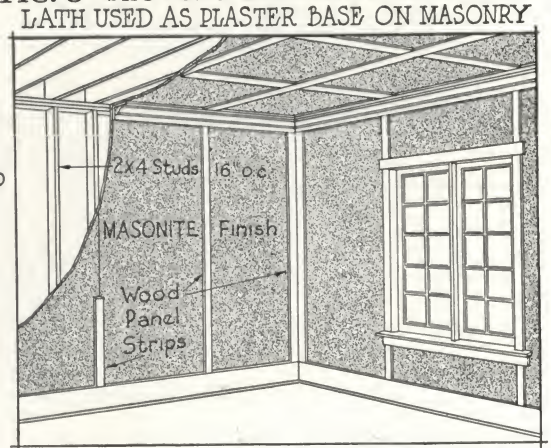


FIG. 6 SHOWING MASONITE USED AS AN INTERIOR TRIM

MASONITE CONSTRUCTION DETAILS

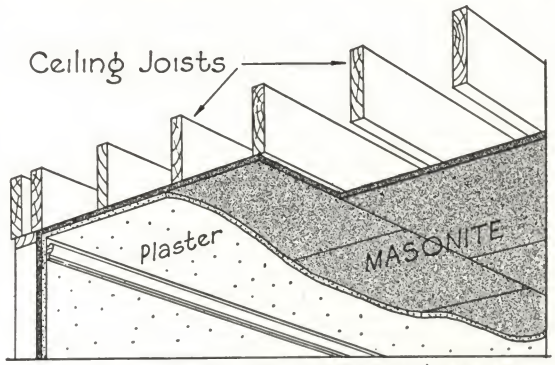


FIG. 7 CEILING INSULATION

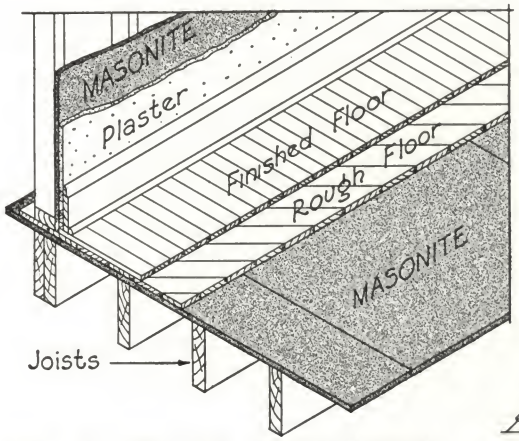


FIG. 8 FLOOR INSULATION

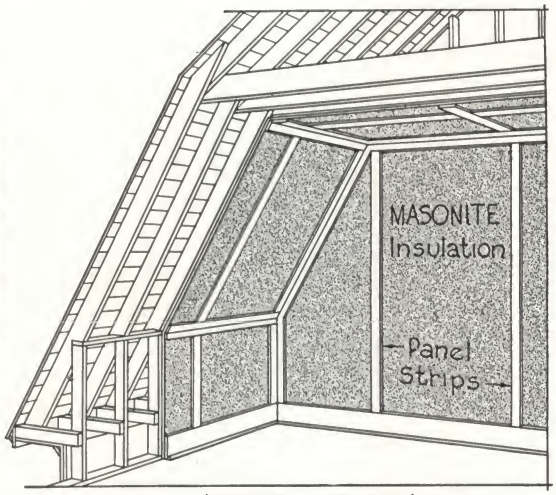


FIG. 9 ATTIC INSULATION

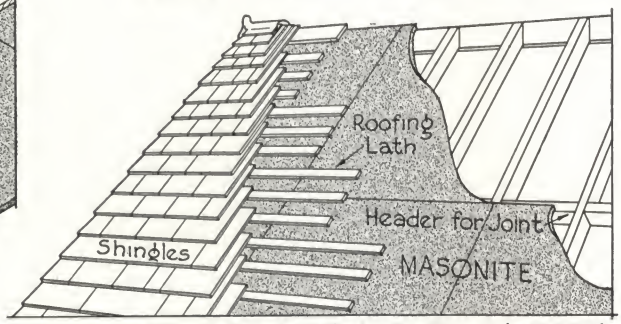


FIG. 10 MASONITE NAILED TO RAFTERS

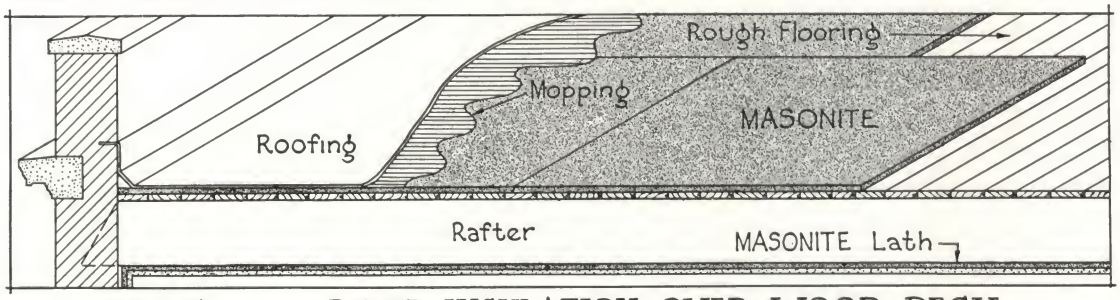


FIG. 11 ROOF INSULATION OVER WOOD DECK

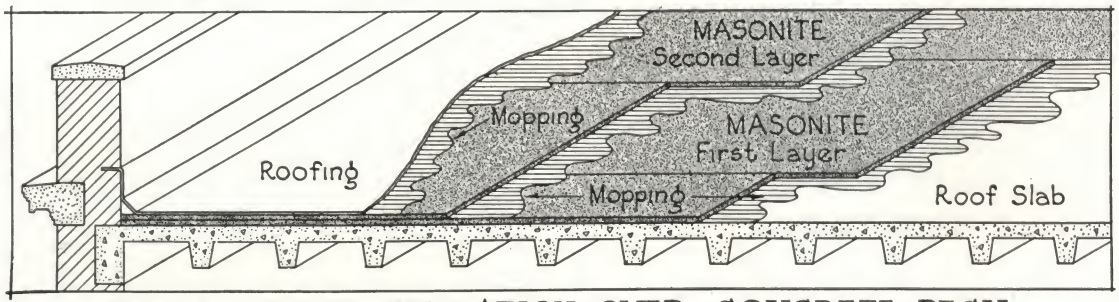
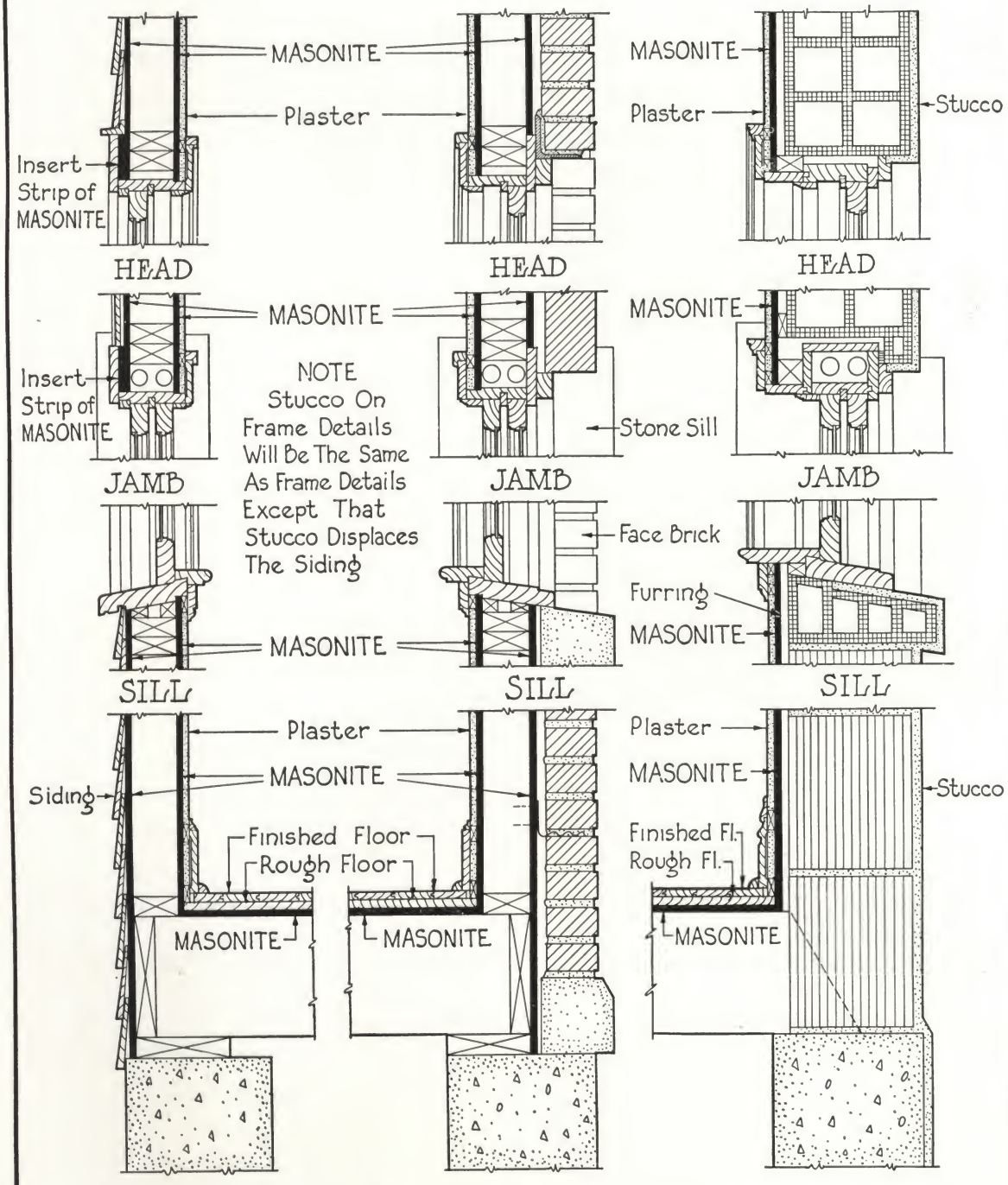


FIG. 12 ROOF INSULATION OVER CONCRETE DECK

MASONITE CONSTRUCTION DETAILS

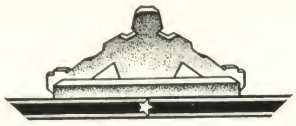


SECTION THRU FRAME WALL
FIGURE 13

SECTION THRU BRICK VENEER WALL
FIGURE 14

SECTION THRU HOLLOW TILE WALL
FIGURE 15

VARIOUS CEILING AND WALL TREATMENTS OBTAINABLE WITH MASONITE STRUCTURAL INSULATION BOARD. NOTE THE EFFECTS OBTAINED BY GROOVING THE BOARD IN PATTERNS. THE WAINSCOT IS OF TEMPERED PRESDWOOD



MASONITE PRESDWOOD

What MASONITE PRESDWOOD IS

Masonite Presdwood is an all wood fibre board made from fibre, obtained by exploding fresh clean chips by high pressure steam. These fibres are then thoroughly felted together and pressed into board form in steam heated, flat bed hydraulic presses.

In many ways, Masonite Presdwood is an improvement on nature's original material. It is both grainless and knotless. It has great resistance to moisture, and is far denser and tougher. Its strength is uniform in all directions, having no cross grain. This refabricated wood contains no foreign substance, not even a chemical binder. It is genuine wood and nothing else. The fibres are separated by steam and put together again by heat and pressure.

SHAPE, SIZE AND THICKNESS

Presdwood is made only in board form to a standard width of 4′ and a maximum length of 12′. These boards are available in the following thicknesses: $\frac{1}{10}$″, $\frac{1}{8}$″, $\frac{3}{16}$″, $\frac{1}{4}$″ and $\frac{5}{16}$″.

MASONITE *Tempered* PRESDWOOD

What MASONITE *Tempered* PRESDWOOD IS

Masonite Tempered Presdwood is obtained by subjecting plain Presdwood to a special tempering process, which consists of treating the board with liquids and heat, in much the same manner as steel is tempered. This tempering process increases the tensile and transverse strength, resistance to abrasion, and reduces moisture absorption. It has a tendency to further bind the fibres together, filling the voids and making a denser product. It is an even more dense and tough product than plain Presdwood.

SIZE, SHAPE AND THICKNESS

Tempered Presdwood also is made only in board form to a standard width of 4′ and a maximum length of 12′. These boards are available in the same thicknesses as plain Presdwood, namely, $\frac{1}{10}$″, $\frac{1}{8}$″, $\frac{3}{16}$″, $\frac{1}{4}$, and $\frac{5}{16}$″.

GENERAL INFORMATION and SPECIFICATIONS FOR *Plain* and *Tempered* PRESDWOOD

Advantages of Plain and Tempered PRESDWOOD

They will not crack, split, or splinter. They are highly resistant to wear and moisture and show little contraction or expansion. They contain no foreign substances of any kind that are injurious to tools. They are easily worked on planers, sanders, and shapers, as well as with hand tools. Tempered Presdwood being more dense and harder will produce a smoother and cleaner cut.

USES OF PLAIN AND TEMPERED PRESDWOOD

To cover this subject would necessitate the use of much space, for these products are being used extensively in many diversified fields. The uses pointed out herewith are therefore those uses which are of particular interest to the architect, builder, contractor, carpenter, and home owner. For interior decoration, plain Presdwood is used for panels on walls and ceilings, either natural or as a base for any desired decorative treatment. It is used in private homes, business offices, stores, or public buildings. Properly installed, there is no danger of the broad, smooth, handsome boards curling, warping, or buckling. It is also used extensively in building cabinets and for closet lining.

TEMPERED PRESDWOOD

Tempered Presdwood is used for the front and tops of counters, as tops for desks and tables and for drawer bottoms.

It has had wide acceptance for use as a concrete form material, using it both structurally and as a liner inside of wood forms. Where concrete surfaces are to be left exposed, the use of Tempered Presdwood for form lining results in a fine, smooth surface on the concrete wall, column or slab, so that no special surfacing or grinding work is required. Possibly its greatest advantage is the number of re-uses it is possible to obtain when it is used as a concrete form material. For complete details and specifications covering this use, refer to Masonite Tempered Presdwood Catalog.

FOR SPECIAL USES

Both plain and Tempered Presdwood are used in building radiator cabinets, clothes hampers, fire screens, radio cabinets, card tables, incubators, brooders, shipping cases, children's play houses, etc.

METHOD OF APPLYING *Plain* and *Tempered* PRESDWOOD

Cutting and Fitting—Any woodworking tools may be used. The boards should be cut to accurate size. Under no condition should Presdwood be sprung or forced into place.

Nailing—Both sizes and type of nails to be used are determined by the particular requirements of the case. Where any nailing is required in the center of the board, this should be done first, after which the nailing of the edges should be done. Never "toe-nail" Presdwood.

Gluing—Glue Presdwood just as you would any other wood board, using a good high grade waterproof cement or glue, being careful to secure solid contact over the entire glued surface.

Finishes—Practically all of the leading manufacturers of paints, lacquers, and varnishes are familiar with the finishing of both plain and tempered Presdwood. As plain and Tempered Presdwood go into so many diversified fields, space does not permit finishing specifications. Where doubt arises regarding the finishing of plain or Tempered Presdwood, consult your paint dealer or write direct to the paint manufacturer concerning any special finishes or effects you may desire.

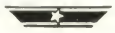
In most instances, where paint is to be used, the use of Tempered Presdwood will save one priming coat.

A list of approved primers or sealers for plain and Tempered Presdwood is supplied on request.

Note: Where Presdwood or Tempered Presdwood is to be exposed to high humidity, it should have cold water brushed on the screen side and allowed to stand for approximately twelve hours before being installed. This insures a permanent smooth, flat surface.

MASONITE TEMPRTILE

Temprtile is Tempered Presdwood into which scoring has been pressed. The scoring is in 4″ blocks, and the Temprtile, when carefully finished, gives a tile effect that in numerous instances is mistaken for ceramic tile. Masonite Temprtile may be installed, however, at only a small fraction of what a ceramic tile installation would cost. It is practical and decorative in kitchens, serving rooms, breakfast nooks and bath rooms. For complete details and specifications, refer to Masonite Temprtile Catalog.



Genuine

MASONITE

STRUCTURAL INSULATION

INSULATING LATH—QUARTRBOARD

PRESDWOOD—TEMPRTILE

1936

MASONITE *Corporation*

111 *W. Washington Street,* CHICAGO, ILLINOIS

1936 EDITION

THE Gold Bond HANDBOOK

ON INSULATION PRODUCTS FOR THERMAL INSULATION AND SOUND CONTROL

NATIONAL GYPSUM CO.—GENERAL OFFICES, BUFFALO, NEW YORK

THE Gold Bond HANDBOOK

ON INSULATION PRODUCTS FOR THERMAL INSULATION AND SOUND CONTROL

Manufactured and sold by National Gypsum Company through 7000 dealers in 37 states east of the Rocky Mountains, offering a complete service in products controlled and guaranteed by one company.

Copyright 1935 by National Gypsum Company

NATIONAL GYPSUM COMPANY—GENERAL OFFICES, BUFFALO, N. Y.

Location of Plants:
National City, Mich.
Camden, New Jersey
Akron, N. Y.
Niles, Ohio
York, Penn.
Luckey, Ohio
Oranda, Va.
Rotan, Texas
Clarence Center, N. Y.
Fort Dodge, Iowa
Lime City, Texas

ALUMINUM FOIL INSULATION BOARD AND LATH

Presenting the newest and most effective principle: Reflective Insulation—in combination with rigid, fireproof Gold Bond Gypsum Lath and full length Gypsum Wallboard. The ideal insulation. Saves one-third or more in cost.

SCIENTISTS have recently discovered the practical application of the principle that *heat waves, like light waves, are reflected by a polished metal surface.* So effective is this new type of insulation, that already it has been adopted by the United States Navy, leading railroads, and manufacturers of refrigeration equipment. Many foremost architects and building experts stand ready to vouch for its superiority over previous types of insulation.

Increased Year-Round Comfort

During severe hot weather, aluminum foil insulation has proved its ability to keep inside temperatures 10 to 20 degrees or more below outside. While during the average heating season it may be counted upon to save from $40 to $100 in fuel bills for the owner of the average size house. Yet aluminum foil insulation costs considerably less than other types.

One of its most striking features to the man accustomed to the weight and bulk of ordinary insulating materials, is the almost total absence of weight in aluminum foil. For instance, on the U. S. S. New Orleans less than 2000 pounds of aluminum foil was used instead of more than 100,000 pounds of bulky insulation. The ocean liners Rex and Comte di Savoi carry only 1/60th the normal insulating weight because of aluminum foil. While new streamlined, air-conditioned trains, refrigerator cars and trucks are insulated more effectively and permanently, with a welcome saving in space and weight, through aluminum foil.

A Combined Plaster Base and Insulation

Gold Bond Aluminum Foil Insulation Lath is standard Gold Bond Gypsum Lath, on one side of which is laminated a mirror-like sheet of pure polished aluminum. Insulation and plaster base are combined into a thoroughly practical, fireproof, easily erected product. This double purpose lath costs but little more than ordinary gypsum lath. An additional saving is made in application where the only operation is nailing up the lath.

Gold Bond Aluminum Foil Insulation Board, full size panels of sturdy, fire-proof gypsum board with foil firmly laminated on one side, brings two savings—(1) in first cost, (2) in application.

Insulation Values

Numerous tests have shown the remarkable effectiveness of this new type of insulation. It is based on the principle that a polished metal surface—in this case polished aluminum selected because of its ability to withstand corrosion—will reflect 95% of all radiant heat. It blocks heat entry in summer—stops heat loss in winter.

At this point it is well to remember that the only active agent involved in insulation is *heat energy.* As heat energy, like water, always seeks a level or balance, heat energy is passed from the warmer to the colder body.

Mirrored Surface Reflects Heat Waves

A combined plaster base and insulating lath, erected in one operation at a considerable saving. Approximately 21% more efficient than standard insulating board under like conditions.

In house construction in Summer, heat energy from outside passes into the cooler interior of the house. The amount of heat flow of course, depending upon degree of insulation. In Winter, the warmer furnace heat inside the house passes outward to the colder air. Here again heat loss depends upon amount of insulation.

Approximately 75% of all heat traveling through walls and ceilings of buildings is radiant heat, or heat waves. This is distinguished from convected heat, or moving hot air, and conducted heat, or heat energy moving along a solid or liquid body.

It is the passage in or out of this radiant heat which is 95% stopped by Gold Bond Aluminum Foil Lath and Wallboard.

Comparative tests on Aluminum Foil Board and Lath show this material to be approximately 21% more effective than standard insulating board when employed in identical wall construction.

Test Data

MATERIAL	Conductivity or Conductance	Resistivity or Resistance	AUTHORITY
½" Rigid Fibre Board	0.66	1.52	A.I.A. File 37 Table V
½" Flexible Blanket	0.54	1.85	"
⅜" Plaster Board	3.73	0.27	"
¾" Metal lath and plaster	4.40	0.23	"
⅜" PLASTER BOARD plus FOIL (over ¾" air space)	0.41	2.44	"
Over ¾" air space faced one side with aluminum foil	0.46	2.17	
(Above values based on thickness as stated and based on "Thermal Insulation of Buildings"—AIA File 37)			
Wall Section with Fibre Insulation Board (temp. difference 70-72° F.)	.379	2.64	A.D. Little Inc.
Same section as above with Gold Bond "Reflectal" Insulation Board	.298	3.36	"

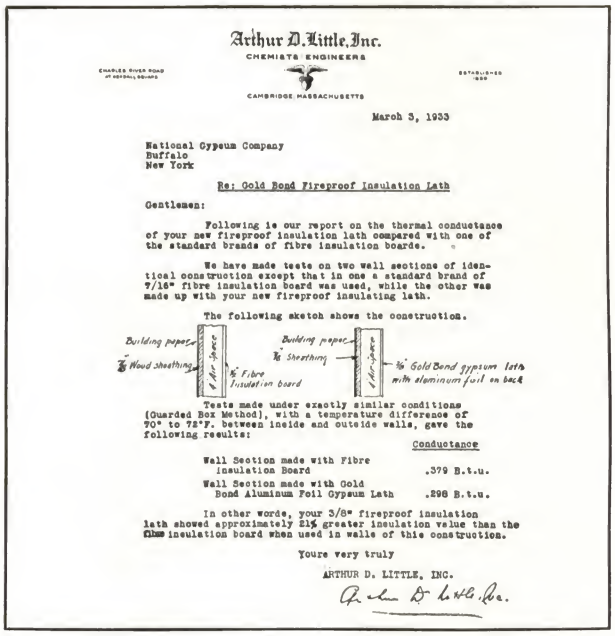
"Plus Values" of Gold Bond Aluminum Foil Insulation Lath and Wallboard

Structural Characteristics—Gold Bond Aluminum Foil Lath and full length board have all the well known structural characteristics of patented Gold Bond Gypsum Wallboard—including exceptional strength, lightness and ease of handling.

Fireproof Characteristics—The fire hazard of most types of ordinary insulation is completely avoided. It is made of pure gypsum—as fireproof as rock itself.

Moisture Resistance—An especially important feature is absolute freedom from warping, buckling and cracking—common enough occurences in fibre insulating lath and board.

Permanence—The solidity and permanence of Gold Bond Gypsum Lath and Board has long ago been amply proved. Recent strenuous tests and others taken over a period of years, fail to show any decline of efficiency with age in aluminum foil. This is explained by the fact that a reflective oxide coating forms on aluminum, in no way detracting from the insulating effect, but preventing corrosion even in the vicinity of large steel mills where the air is loaded with corrosive sulphur fumes.



Arthur D. Little, Inc.
CHEMISTS ENGINEERS
CAMBRIDGE MASSACHUSETTS

March 3, 1933

National Gypsum Company
Buffalo
New York

Re: Gold Bond Fireproof Insulation Lath

Gentlemen:

Following is our report on the thermal conductance of your new fireproof insulation lath compared with one of the standard brands of fibre insulation boards.

We have made tests on two wall sections of identical construction except that in one a standard brand of 7/16" fibre insulation board was used, while the other was made up with your new fireproof insulating lath.

The following sketch shows the construction.

Tests made under exactly similar conditions (Guarded Box Method), with a temperature difference of 70° to 72°F. between inside and outside walls, gave the following results:

	Conductance
Wall Section made with Fibre Insulation Board	.379 B.t.u.
Wall Section made with Gold Bond Aluminum Foil Gypsum Lath	.298 B.t.u.

In other words, your 3/8" fireproof insulation lath showed approximately 21% greater insulation value than the fibre insulation board when used in walls of this construction.

Yours very truly

ARTHUR D. LITTLE, INC.

Arthur D. Little, Inc.

Rigidity—Properly applied, Gold Bond Aluminum Foil Insulating Lath and Board insure a rigid wall of great structural strength.

Plaster Base—The patented indented surface found only on Gold Bond Gypsum Lath is the perfect plaster base, providing suction necessary for ideal application conditions.

Application: Lath and Wallboard

Gold Bond Aluminum Foil Insulation Lath and Wallboard are applied with metal side against framing members. Space between studs and joists is essential. Do not apply direct to another flat surface.

Sizes and Thicknesses

GOLD BOND ALUMINUM FOIL INSULATION LATH	
¼ and ⅜ inch thick	16 x 32, 16 x 48 and 32 x 36 inches

GOLD BOND ALUMINUM FOIL INSULATION BOARD		
Thickness	Width	Length
¼, ⅜, ½ in.	32 and 48 in.	4, 5, 6, 7, 8, 9, 10, 11 and 12 feet
½ in. Square Edge	36 in.	8, 9 and 10 feet
½ in. T & G Edge	36 and 48 in.	8, 9 and 10 feet

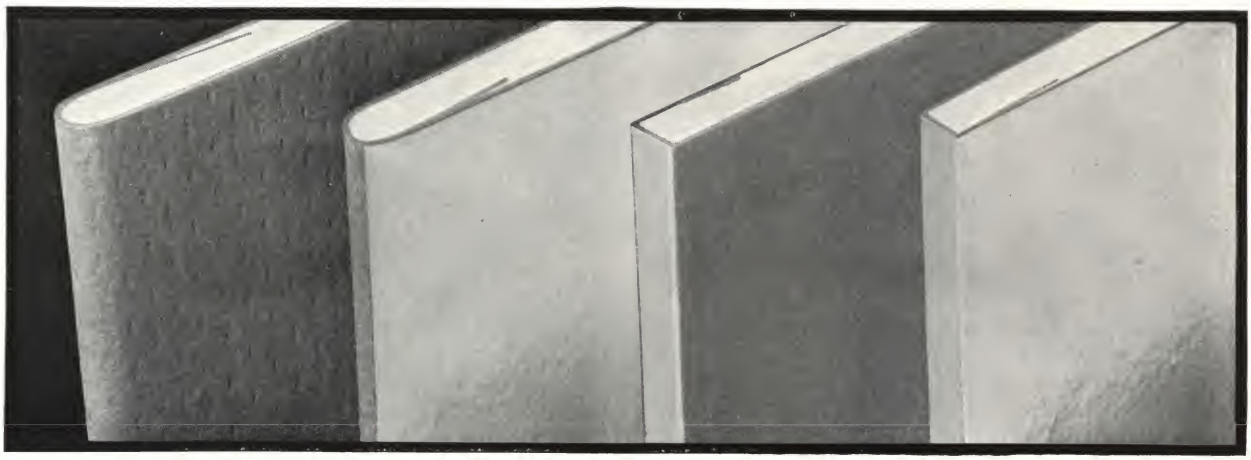


Illustration Showing the Front and Aluminum Foil-Covered Back of the Gold Bond Aluminum Foil Insulation Lath and Wall Board

GOLD BOND FIBRE INSULATION PRODUCTS
STRUCTRAL BOARD · · · LATH · · · TILE · · · ROOF BOARDS

Made from tough, wiry, licorice root fibres, these products are recognized as the strongest avilable

GOLD BOND Insulation Products are made from the long tough fibres of the roots of the licorice plant. The natural tough structure of the roots develops great structural strength and a high thermal and acoustical resistance, due to the millions of microscopic dead air cells contained in their structure. The improved method of manufacturing the board develops its special advantages to the highest degree.

Insulating Value

The thermal conductivity has been determined by Professor Sloan of the University of Pennsylvania and Professor Gebhardt of the Armour Institute to be 0.34 B.T.U. per square foot per hour per inch thickness per degree Fahrenheit difference in temperature between opposite sides. Average tests at U. S. Bureau of Standards give it a rating of 0.339.

Structural Strength

Numerous comparative distortion tests between walls sheathed with Gold Bond Insulation Board and standard wood sheathing show that under very severe stresses the distortion of Gold Bond Insulating Board is less than one-fifth as great as that sheathed with wood. In the tests also, the structures covered with Gold Bond Insulation Board were sufficiently resilient to return to their original position upon release of the stress. Its tensile strength averages 325 lbs. per sq. in. and its weight is approximately 19 lbs. per cu. ft.

Fire Resisting Qualities

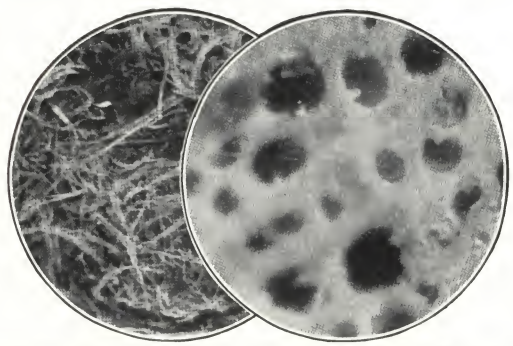
While the board is not fireproof, it has a resistance to fire. Tests were made with a blow torch flame on Gold Bond and two other boards used for a similar purpose. Board "X" burned through in 2 minutes, charring an area of 300 sq. in. Board "Y" burned through in 3 minutes, charring an area of 200 sq. in. *Gold Bond required 4 minutes for the flame to penetrate and charred only 64 sq. in. of the board.*

Its Moisture Resisting Quality

Because the licorice fibres are waterproofed during the processing of the fibre into the board, there is little danger of its warping under ordinary building conditions.

In laboratory tests, Gold Bond Structural Insulation Board was immersed in water for 24 hours. At the end of that period it had absorbed only 29.7% of its weight. Two other boards for a similar purpose were also tested. Board "X" absorbed 53% of its weight and Board "Y" absorbed 42% of its weight in the same time.

Licorice Root at Camden, N. J. Insulation Plant.



Microphoto Showing (Left) Sterile Root Fibres Which Give Gold Bond Its Tremendous Strength; (Right) Section of Gold Bond Showing Tiny Dead Air Pockets.

Is Vermin Resistant and Unaffected by Age

Licorice roots are inherently resistant to vermin and bacteria. This natural characteristic is further enhanced by complete sterilization and chemical treatment of the fibres and no case has ever been reported where insects or vermin have attacked the board. Installations made over 25 years ago show absolutely no deterioration as to brittleness or loss of strength.

GOLD BOND STRUCTURAL INSULATION BOARD FOR WALL AND CEILING TREATMENT

DURING the past few years Gold Bond Insulation Board has become one of the leading wall and ceiling materials. And the reason for this popularity can easily be appreciated when one considers the extra advantages that Gold Bond offers—First, a distinctive interior finish; Second, efficient insulation against heat and cold; Third, a sound absorbtive material that quiets noise.

Gold Bond Insulation Board is used for both new and modernizing work. The large, sturdy panels are nailed directly to the studding, or applied right over the present material, building attractive, crack proof interiors that are unsurpassed for beauty, practicability and economy. Bevelling tools may be employed to produce ornate, modern designs that can be made just as extreme as desired.

Plant at Camden, N. J., Where Gold Bond Insulation Board and Lath Are Made

Decoration

Gold Bond may be left in the natural color—a warm tan-tone or may be finished with oil or cold water paints. The illustration at the bottom of the page shows a two-tone textured glazed finish that may be obtained very economically and with a minimum of effort because the surface of Gold Bond is already textured as it comes from the factory.

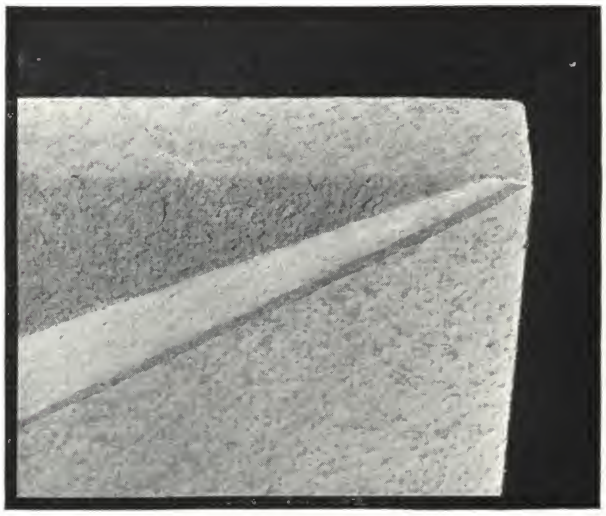
Sizes and Thicknesses

48 inches wide and 6, 7, 8, 8½, 9, 9½, 10 and 12 feet long. Standard thickness ½ inch (also made 1 inch thick).

Treating the Intersections

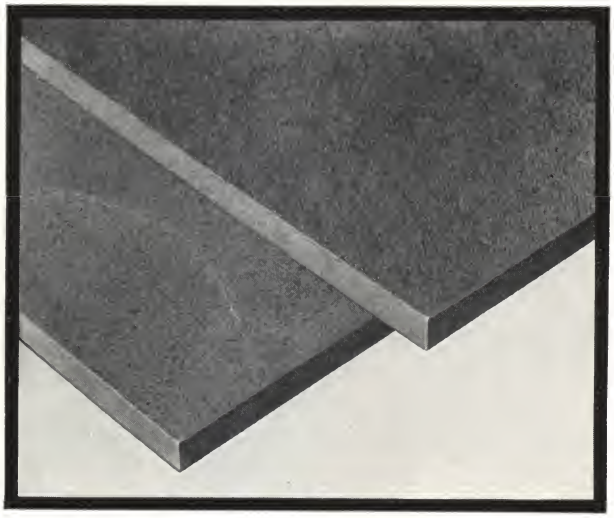
The edges of the panels are often bevelled (on the job) and the joints left unfinished. However, the customary treatment is to cover the intersections with wood decorative battens. The new metal strips are also very popular.

For economy's sake, strips, sawed from panels of Gold Bond Insulation Board, are sometimes used over the joints. The latter treatment can be made very attractive if the strips are grooved or bevelled.



This Full Size Illustration Shows Steps in Producing a Glazed Finish on Structural Insulation Board for Interior Finish

At top is plain board; center, one coat of white paint; lower, glazed and stippled finish.



Either Side of Gold Bond Insulation Board May Be Used as Each Surface Has a Distinctive Texture Design

The reverse side is shown to the left and the face side (with finer texture) to right.

GOLD BOND STRUCTRAL INSULATION BOARD FOR THERMAL INSULATION OF WALLS AND ROOFS

Exterior Wall and Roof Sheathing

The use of Gold Bond Structural Insulation Board on the exterior of a frame building greatly stiffens the frame and insulates as well. It is used in place of wood sheathing under wood shingles, siding, stucco, and brick veneer. On account of the large area of the boards and joints coming on studs or headers, it makes a tight wall, and air leaks are reduced to a minimum as well as the transmission of heat through the walls.

Since one of the greatest sources of heat losses is through the roof, the use of the Insulation Board is highly recommended for use on all types of sloping roofs applied directly to the rafters. Shingles, slate, etc., are applied to furring strips laid over the insulation.

With Gold Bond Structural Insulation Board for the exterior walls and Gold Bond Insulation Roof Boards across the top, a solid barrier of insulation is built around the house. Actual tests prove that a saving of 20 to 30 per cent in fuel is effected during the heating season. In Summer, the entire house is decidedly cooler, particularly the rooms on the second floor.

Sizes and Thicknesses

Gold Bond Structural Insulation Board—Standard thickness, ½ inch. (Also made 1 inch thick.) Sizes: 48 inches wide and 6, 7, 8, 8½, 9, 9½, 10 and 12 feet long.

Gold Bond Insulation Roof Boards—Standard size, 2 x 5 feet x ½ inch thick. (Also 1, 1½ and 2-inch thicknesses.)

GOLD BOND INSULATION TILE

Quiets Noise . . . Decorates . . . Insulates

Gold Bond Insulation Tile is the ideal wall and ceiling material for Stores, Offices, Theatres, Corridors, etc.; in fact, for every type of room or building where modern, decorative treatments are desired plus the extra advantages of insulation and sound correction. The coefficient of sound absorption is .30 at a frequency of 512 cycles.

Used Extensively for Modernizing

Applied right over present material

Old Stores, Restaurants, or other buildings can be quickly transformed into modern, inviting interiors with Gold Bond Insulation Tile. When a busy store is to be remodelled, speed is of utmost importance so that business won't be held up. Very often, stores are refinished with Gold Bond over-night, the sturdy Tiles being nailed or cemented directly over the old material. Besides offering the last word in decorative treatments, Gold Bond insulates against heat and cold, and in addition, provides effective sound absorption so much desired for almost all types of buildings.

Color and Decoration

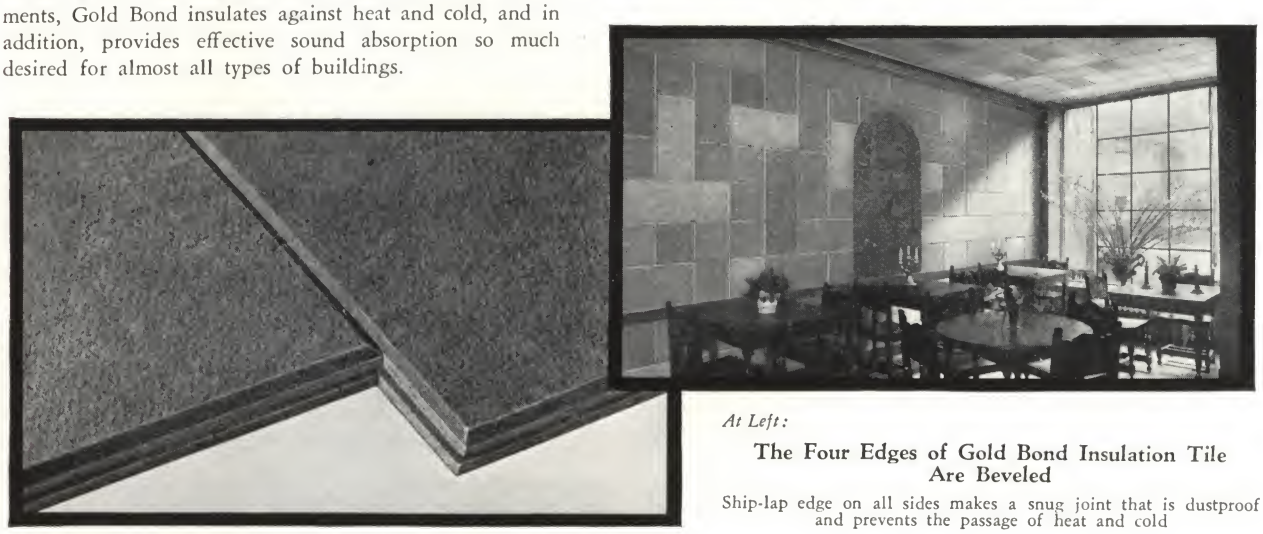
Gold Bond Insulation Tile is of the same color as Gold Bond Insulation Board—a warm tan tone. It is often left in the natural color, which won't oxidize or darken, or it can be decorated with oil or cold water paint. The latter decoration is particularly recommended as it won't seal the surface and causes only a slight reduction in sound absorption.

Sizes and Thicknesses

Gold Bond Insulation Tile is ½ inch thick and supplied in sizes that permit of unlimited, interesting patterns.

Small Sizes		Large Sizes	
6x 6 in.	6x12 in.	16x32 in.	16x48 in.
8x 8 in.	8x16 in.	18x32 in.	18x48 in.
12x12 in.	12x24 in.	24x32 in.	24x48 in.
16x16 in.	24x24 in.		

All sizes packed 15 panels to the bundle.



At Left:

The Four Edges of Gold Bond Insulation Tile Are Beveled

Ship-lap edge on all sides makes a snug joint that is dustproof and prevents the passage of heat and cold

SPECIFICATIONS FOR APPLYING GOLD BOND STRUCTURAL INSULATING BOARD

FOR EXTERIOR SHEATHING OF WALLS AND ROOFS

Scope—All exterior frame walls and sloped roof surfaces, unless otherwise noted, shall be sheathed with Gold Bond Structural Insulating Board. (Note here—exceptions to the above.)

Materials—Insulating Board shall be Gold Bond Structural Insulating Board of National Gypsum Company, Buffalo, N. Y. Board shall be ½ in. thick by 4 ft. wide and lengths as required. Roof Insulating Board may be ½ in. thick and in 22 in. x 47 in. or 24 in. x 48 in. sheets if desired.

Framing—All studs, sills, plates, joists and roof rafters, etc. shall be framed in the usual manner. Studs, joists and rafters shall be accurately spaced 16 in. on center. Use 2 x 4 headers cut between studs for nailing where horizontal joints in the boards occur and where necessary for all end joints.

Application—The Insulating Board shall be applied with the long side parallel to the studs for the walls and at right angles to the rafters on the roof. All ends and edges shall have solid bearings. The board shall start at the bottom of the sill and continue to the underside of the roof sheathing, making a tight joint.

Always allow ¼ in. between ends and edges of the board and never force them together, except where a tight joint is desirable. With other materials, as at door and window frames, eaves and similar locations, the Insulating Board shall be brought into close contact.

Nailing—Boards shall be nailed with 1½ in. large headed, galvanized roofing nails. Begin at intermediate studs, rafters or furring strips, nailing every 6 in. apart. Follow by nailing the top edge, bottom edge and lastly the side edges. Nails shall be placed 4 in. apart and ⅜ in. back from the edges and driven until the nail head is slightly below the surface. On sloping roofs, no headers are required at the cross joints, as the stripping for the roofing material may occur over the joints, thus closing them. When the stripping does not cover the joints, an extra strip shall be inserted for this purpose.

Where it is desirable to apply the insulation board as supplemental to sheathing or roofing boards, it will only be necessary to use 1 in. nails, sparsely driven (starting at the center of the board) to hold the boards in place until the side wall or roofing material is applied.

Furring Strips—Where shingles, slate, etc. are to be applied to the roof, the roof shall be furred with shingle lath, properly spaced and the nails shall be ½ in. longer than ordinarily used so as to nail through the Insulating Board to the rafters.

FOR INTERIOR FINISH

Scope—The interior of walls, partitions and ceilings (except where noted) shall be covered with Gold Bond Structural Insulating Board.

Materials—Insulating Board shall be Gold Bond Structural Insulating Board of National Gypsum Company, Buffalo, New York. Battens shall be wood batten (describe size, thickness.)

Framing—All studs, sills and plaster shall be framed in usual wood frame construction. All studs shall be accurately spaced 16 in. on center. Use 2 x 4 in. headers cut between studs for nailings where horizontal joints in boards occur and for chair rails, base and similar trim. Extra studs shall be used for nailing where necessary to carry out the paneling design desired.

Application—The Insulating Board shall be applied with the long sides parallel to the studs and at right angles to roof, beams, etc., allowing ample bearing for nailing on all edges. Boards shall be applied in single sheets from floor to ceiling on walls and partitions and in full width panels on the ceilings wherever possible. Horizontal joints shall be made only over framed headers. Boards shall be kept apart ¼ in. on sides and ends. Boards must not be forced into place.

About 24 hours before applying Gold Bond Insulating Board it shall be slightly dampened, using about a pint of water on each side of a 4/8 ft. board.

Nailing—Boards shall be nailed first to intermediate studs with 1½ in. finishing nails, spaced 6 in. apart and driven at a 30° angle. Heads of nails shall be countersunk with nail set. Follow by nailing the top edge, bottom edge and lastly the side edges. Where joints are to be covered by battens, the edges of the boards may be nailed with 4 d box nails or 1½ in. large head galvanized roofer's nails. They should be spaced 3 to 4 in. apart, ⅜ in. back from the edge and driven until the nail head is slightly below the surface.

Battens—Trim—Joints shall be covered with (state kind) wood battens (specify width and thickness), (also specify other trim). The battens shall be nailed to the studs through the Insulating Board using 2¼ in. finishing nails driven at an angle.

Note: (If the battens are of wood the nails should be set and holes filled with putty before painting.)

Decorating—*Painting*—Ordinary lead and oil paints may be applied satisfactorily without sizing or priming, but it is more economical in paint to size the wall. Two coat work is advised for most effective results. A very pleasing effect is obtained by applying one coat of thin white paint. Then apply coat of Gold Bond Glaze tinted as desired and stipple with soft cloth.

Staining—Staining with ordinary commercial stains will prove satisfactory if the manufacturer's directions are followed.

Calsomining—When using calsomine, the surface must first be sized or glue size must be added to the calsomine. Follow manufacturer's direction.

Gold Bond Color Textures—This one coat color texture finish may be applied over a sizing coat or without sizing. By its use the color and texture are applied at one operation. Finish does not require glazing. *Caution:* All joints or intersections must be covered with panel strips. See "Specific Application Data" for Color Texture. (Refer to File Index.)

Multitone Glazing—The effect of a high grade texture finish can be obtained easily by a thorough base coat of flat white paint to completely seal the surface and give a white background. This is followed by applying a standard oil glaze colored as desired and stippling with cloth to produce multi-tone effects of texture glazing.

GOLD BOND INSULATING LATH

Made of tough licorice root fibres, the lath is chemically treated by a patented process which accelerates the set of plaster

GOLD BOND Insulating Lath is made of the tough fibres of licorice roots in the same manner as that used in the Gold Bond Insulating Board. The only difference is in the size of the lath. This comes in sheets 18 x 48 inches, tongue and groove, and ½ inch thick.

A Practical Plastering Base with High Insulating Qualities

Through many tests, the rippled surface of Gold Bond Insulating Lath has been demonstrated as a most efficient base for plastering. Made in exactly the same manner as Gold Bond Insulating Board, it possesses all the fine qualities of that board. It is strong, resilient, and highly moisture resisting, and reinforces the framing. It has an insulating value of 0.34 B.T.U. value per inch of thickness.

Its Plaster Bonding Qualities

The felted fibrous roots offer an ideal surface for application and penetration of gypsum plaster. The adhesive qualities of gypsum plaster depend on the penetration of the needle-like crystals of the gypsum into the surface of the board. It penetrates into the surface of the lath so well that the results of numerous tests have given it an average adhesion value of 1600 lbs. per square foot. Its adhesion, therefore, is greatly in excess of the requirements of 600 pounds per square foot required by the A. S. T. M. standard.

Exclusive Advantages

Gold Bond Insulating Lath has received a patented treatment which reduces the problems involved in the application of a wet plaster over a fibrous product such as insulation lath. This patented treatment involves the use of a chemical on the surface of the lath which accelerates the set of the plaster in contact with the surface and retards the movement of moisture into the lath which ordinarily tends to cause expansion, buckling, and cracking. This is in addition to the remarkably high resistance to moisture absorption inherent in the board.

Its Cost

The cost of Gold Bond Insulating Lath in the finished wall is only slightly more than that of ordinary wood lath and plaster, and considerably less than that of metal lath and plaster.

Its Application

Gold Bond Insulating Lath is applied with the rippled surface out and lengthwise across the studs. It is applied with tongue and groove edges in moderate contact (not forced together) and square ends on studs, spaced ¼ in. apart. It is nailed with 1⅛ in. nails with $\frac{5}{16}$ in. heads. The nails are spaced 4 in. apart, and nail head is driven below the surface. All end joints are staggered.

Gypsum Plaster is easily applied over the lath, requiring no forcing to obtain key.

Gold Bond Insulating Lath should *not* be wetted down before applying.

In all vertical re-entering angles, and in all angles between ceilings, soffits and walls, Gold Bond expanded metal lath of strips or Gold Bond Cornerite shall be nailed. It is recommended that 6 in. strips of expanded metal later be attached to continuous joints in ceilings.

GOLD BOND DRY FILL INSULATION

A Non-combustible Gypsum Insulation Product

For Insulating New and Old Homes

GOLD BOND DRY FILL INSULATION is composed chiefly of finely ground high grade gypsum and fibres. It is used dry between the ceiling joists and between the studs forming the exterior walls.

This barrier of insulation around the house provides additional comfort the year 'round and pays for itself many times over in the saving of fuel during the heating season. Keeps the entire home many degrees cooler in Summer and makes it easier to heat in Winter.

Its Advantages

1—An efficient insulation against heat, cold and sound.

2—It is an inert mineral product; absolutely fireproof.

3—Applied 3 to 4 in. thick, its cost is extremely low.

4—It weighs 18-20 lbs. per cu. ft.

5—Applied 3 in. thick, 100 sq. ft. of ceiling requires 420 lbs.

6—Easy to handle. Packed in 50-lb. bags.

7—Soaking will not injure the insulation after it dries out.

What It Is

Gold Bond Insulation is made from the same high grade gypsum as all other Gold Bond Products. Gypsum itself has good insulating qualities and these are increased by a special fluffing process. This process increases the number of tiny air cells which it naturally contains and by doing so the insulating value is increased.

The fluffing also increases the bulk, reduces its weight and minimizes any settling tendencies.

Gold Bond Dry Fill Insulation is poured between ceiling joists and exterior wall studs, building a blanket of insulation around the house.

Gold Bond Dry Fill has a coefficient of thermal conductivity comparable with that of fibre insulation board. When installed 3 to 4 in. thick, or 6 to 8 times the thickness of ½-in. thick insulation boards, it has a minimum of over 5 times their insulation value.

Its Application Over Ceilings

The Insulation is poured from the bags between the ceiling beams over the back of the lath. It is then leveled off to a depth of 3 in. but not packed and is then lightly sprinkled with water. This forms a slight crust which prevents the material from dusting.

For buildings already built, it is generally possible to apply the insulating over the second story by removing every fifth board of attic floor where a single floor is used. If attic space is not floored over, the insulating is simple.

SPECIFICATIONS FOR GOLD BOND DRY FILL INSULATION

Scope of Work

All outside walls and attic floor shall be insulated with Gold Bond Dry Fill Insulation.

Material

Insulating material shall be Gold Bond Dry Fill Insulation as manufactured by National Gypsum Company, Buffalo, N. Y. It shall be delivered to the job in manufacturer's original 50 lb. bags and shall be used directly from the bags.

Side Wall Insulation

The entire space between the plaster base or lath and the outside sheathing of all exterior frame walls shall be filled with Gold Bond Dry Fill Insulation from the sill to the underside of the roof plate.

The Insulation shall be left in its original fluffy state and not packed into position.

After the outside sheathing is in place and the walls to be insulated are receiving plaster base or lath, Gold Bond Insulation shall be poured into place in sections not over 48 in. in height at a time as the work of applying the plaster base or lath progresses.

Ceiling Insulation

If the second floor ceiling plaster lath has been applied the insulation shall be filled in between the joists to the depth of not less than 3 or more than 4 in. It shall then be lightly sprinkled to form a crust. If the ceiling is lathed with wood or metal lath, then the insulation shall not be filled in until after the plaster is thoroughly dry.

Note for Carpenter: If the attic is to be floored, the floor must not be laid until the Gold Bond Insulation has been filled between the joists.

SOUND ABSORBING MATERIALS

Their Uses and Values

Acquisition of the Macoustic Engineering Company's formulae and patents by National Gypsum enables them to offer the most complete line of acoustical plasters available

THERE are two distinct Gold Bond Acoustical Plasters—Standard Macoustic with its attractive textured finish and Smooth Finish Macoustic which may be smooth trowelled or floated.

Standard Macoustic, the original acoustical plaster, has been installed in thousands of buildings, including many of the beautiful new Post Offices, Court Houses and other Federal Buildings erected during the past year. The fact that Standard Macoustic was selected by architects time and again for use in buildings of this calibre is conclusive proof of the superior quality of this material.

Smooth Finish Macoustic is a brand new Gold Bond Product introduced by National Gypsum Company in October, 1935. This material was designed to meet requirements where a smooth trowelled or floated finish is desired. Both materials are described in detail on subsequent pages.

Types of Acoustical Materials

Acoustical materials may be classified in two distinct groups: acoustical tiles and acoustical plaster.

Because of its background in the entire plaster industry, the National Gypsum Company has specialized on acoustical plasters rather than acoustical tiles for sound absorption correction.

Acoustical plasters find their main field in new construction where a uniform surface without joints—desirable from the standpoint of architectural design and where the absorption range of acoustical plaster best fits the period of reverberation desired.

Contrasting High and Low Absorption

The following is taken from a letter of a recognized and impartial authority on acoustics.

"A large area of low absorbing material is acoustically equivalent to a smaller area of more highly absorbing material, and where a sufficient area is available, it may often be advisable to use the material of lower absorption from consideration of greater acoustical uniformity. It is to be remembered that excessive absorption is as undesirable as a deficiency."

Other Desirable Features of An Acoustical Material

1—Acoustical treatment must provide a uniform degree of good hearing under varying conditions. An average sized audience must hear as distinctly as a full sized audience.

2—The treatment should be low in cost as well as simple and inexpensive to apply.

3—It should be a permanent building material and become an integral part of the structure.

4—It must be fireproof, rat and vermin proof and not an added hazard.

5—It must enhance and not detract from the decorative qualities of the interior.

6—The architect must be able to have free play for his treatment of the design of the interior.

Gold Bond Macoustic Has All the Above Qualities

Macoustic has precisely the qualities described above. Its successful use in fine interiors by some of the foremost architects confirm this fact.

Macoustic has a unique and distinctive porous structure with inter-communicating natural channels. These entrap sound waves that strike the surface and then, by friction, convert sound energy into heat energy.

Standardization of Absorption Values and the Acoustical Materials Association

For a number of years there has been some confusion in regard to relative values of various materials which are used for acoustical treatments, in the architectural and building fields.

In order to obtain correct unbiased and authoritative tests and technical data on these materials the Acoustical Materials Association was formed by manufacturers who were interested in accomplishing this result.

The National Gypsum Company is one of those manufacturers who recognized the value of such an organization and became one of the charter members.

Technical Advisory Committee

In order to insure absolute impartiality and reliability in the making of the tests a technical advisory committee was asked to cooperate by making the tests. The committee which made the tests on the various products and their uses comprised some of the best known and foremost authorities in the field of architectural acoustics, and consisted of the following members:

Paul E. Sabine, Riverbank Laboratories, Geneva, Ill.
V. L. Chrisler, Bureau of Standards, Washington, D. C.
V. K. Knudsen, University of California, Los Angeles, Calif.
R. F. Norris, C. F. Burgess Laboratories, Madison, Wis.
F. R. Watson, University of Illinois, Urbana, Ill.
S. K. Wolf, Electrical Research Products, Inc., N. Y. C.
Carl A. Erikson, representing the American Institute of Architects.

The data compiled by them is printed in the form of a bulletin. The tests, on the materials involved, have all been obtained in one laboratory, under identical test conditions. This bulletin is available on request.

The Relation of the Association to the Architect

The Association will publish from time to time complete authoritative data regarding the efficiency and ratings of all products made by the manufacturers of the Association. This information will be furnished to architects through the distribution of the Bulletin of the Association.

GOLD BOND SMOOTH FINISH MACOUSTIC FOR TROWELLED OR FLOATED FINISHES

National Gypsum Company's latest contribution to the acoustical plaster field . . . . A product that may be finished comparatively smooth and yet offer high sound absorption . . . . Fireproof, easily applied, permanent

SINCE the introduction of acoustical plasters some years ago, manufacturers have been striving to perfect a material that might be trowelled comparatively smooth and yet offer efficient sound absorption.

In October, 1935, National Gypsum Company announced just such a product . . . Gold Bond Smooth Finish Macoustic. This new material is rich and easy working and may be trowelled exceptionally smooth for an acoustical plaster, or floated.

It goes on easily with little or no droppage and the application cost is approximately the same as regular cement plaster. An all-mineral product, Gold Bond Smooth Finish Macoustic is absolutely fireproof, sanitary and vermin proof.

For the Acoustical Correction of All Types of Buildings, Including Swimming Pools

An outstanding advantage of the new Gold Bond Smooth Finish Macoustic is that it may be used in swimming pools as well as theatres, auditoriums, radio studios, offices and other buildings where acoustical treatment is desirable.

Many acoustical plasters, including our own Standard Macoustic, are not recommended for swimming pools or similar places where the material will be subjected to almost constant high humidity. Gold Bond Smooth Finish Macoustic may be used in buildings of this kind with entirely satisfactory results. It is, however, necessary to apply Macoustic over a portland cement base, as covered under "Mixing and Applying" in the next column.

Coefficient of Sound Absorption

The following table covers a report (dated Sept. 27, 1935) from the Bureau of Standards in Washington on Gold Bond Smooth Finish Macoustic. This test was made under conditions that simulated actual job conditions—the material being applied ½ inch thick over a base of gypsum plaster on metal lath, and trowelled smooth with a steel trowel.

Frequency	256	512	1024	2048
Coefficient of Sound Absorption	.23	.38	.53	.62

Coefficient of Noise Reduction, .45
(Average of these four frequencies).

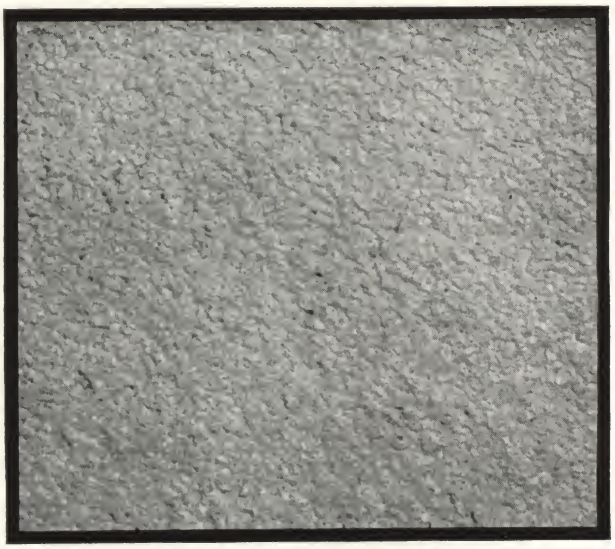
Colors

Supplied in Color No. 1 White (Natural Color) and in the following factory mixed tints: Color No. 5—Ivory, Color No. 10—Cream, and Color No. 15—Buff. Samples of colors will gladly be supplied gratis.

When special colors are desired, it is suggested that the natural color (White) be used and spray painted with any good cold water paint. This will reduce the sound absorption very little. (An oil paint should not be used as that would seal the surface.)

Light Reflection

Gold Bond Smooth Finish Macoustic in the natural color (White) and trowelled smooth has a light reflection of approximately 70%.



Gold Bond Smooth Finish Macoustic May Be Trowelled Unusually Smooth for an Acoustical Plaster

Mixing and Applying

Gold Bond Smooth Finish Macoustic is mixed with clean water to the consistency of regular plaster and allowed to stand an hour before using.

It may be applied over a base of gypsum plaster, lime plaster or portland cement—the base coat to be bone dry and well scored.

Caution: When Gold Bond Smooth Finish Macoustic is to be used in a swimming pool or any other room where it will be subjected to almost constant high humidity, gypsum plaster should *not* be used for the base coat. Instead, use a base composed of equal parts of portland cement and finish lime with two parts of sand.

The first coat of Smooth Finish Macoustic is applied ¼ inch thick and brought to a true surface with darby or rod. A second coat ¼ inch thick is then applied and finished smooth with a minimum of trowelling. For best results a lapse of two hours should be allowed between coats.

A PARTIAL LIST OF MACOUSTIC INSTALLATIONS

NAME	LOCATION	ARCHITECT
ALABAMA		
Scottish Rite Temple	Montgomery	Hyman Witcover
U. S. Veterans' Hospital	Tuskegee	U. S. Veterans' Bureau
ARKANSAS		
U. S. Veterans' Hospital	Little Rock	U. S. Veterans' Bureau
CALIFORNIA		
National Broadcasting Studio	San Francisco	
DELAWARE		
P. S. duPont High School	Wilmington	
DISTRICT OF COLUMBIA		
John Quincy Adams School	Washington	A. L. Harris
National Broadcasting Studio	Washington	
FLORIDA		
Miami Senior High	Miami	Kiehnell & Elliott
Temple Israel	Miami	Robertson & Patterson
GEORGIA		
Bell Telephone Building	Atlanta	Marye, Alger & Vinour
City Hall	Atlanta	G. Lloyd Preacher & Co.
ILLINOIS		
Church of St. Basil	Chicago	Jos. W. McCarty
National Broadcasting Studio	Chicago	
KENTUCKY		
Louisville War Memorial	Louisville	Carrere & Hastings
LOUISIANA		
Bell Telephone Building	New Orleans	Marye, Alger & Vinour
MARYLAND		
Lord Baltimore Hotel	Baltimore	W. L. Stoddard
Western Suburban High School	Bethesda	
Elementary School	Bethesda	
Chevy Chase Elementary School	Chevy Chase	
Eastern Suburban High School	Silver Spring	
MASSACHUSETTS		
John Hancock Life Building	Boston	Parker, Thomas & Rice
Tileston School	Boston	Desmond & Lord
Wellesley College	Wellesley	Day & Klauder
State Mutual Building	Worcester	Parker, Thomas & Rice
MICHIGAN		
Henry Ford Museum	Dearborn	Robert O. Derrick
Bloomfield Country Club	Detroit	Smith, Moss & Mitschke
Lawrence Fisher Residence	Detroit	
Herman Keifer Hospital	Detroit	Albert Kahn, Inc.
University School	Detroit	Robt. O. Derrick, Inc.
Olds Motor Plant, Offices	Lansing	
U. S. War Veterans' Hospital	Newberry	
MINNESOTA		
Univ. of Minn. Hospital	Minneapolis	C. H. Johnston
MISSOURI		
Catholic Cathedral	St. Louis	Barnett, Haynes & Barnett
NEW JERSEY		
Convention Hall	Asbury Park	Warren & Wetmore
Camden Safe Deposit Co.	Camden	Rankin & Kellogg

NAME	LOCATION	ARCHITECT
NEW JERSEY (Continued)		
Holy Name of Jesus Church	East Orange	Meginnis & Walsh
Bamberger Store	Newark	Jarvis Hunt
Post Office	Newark	
NEW YORK		
Bronx Magistrate Court	Brooklyn	Max Hausle
Grassland Hospital	Eastview	Walker & Gillett
First Presbyterian Church	New Rochelle	J. Russell Pope
City Bank—Farmers Trust Co.	New York	Cross & Cross
Fordham University	New York	Emil Perrot
Junior League Club	New York	John Russell Pope
Clarence Mackay	New York	H. T. Lindberg
National Broadcasting Studio	New York	Walter Ahlschlager, Inc.
Salvation Army Building	New York	Voorhis, Gmelin & Walker
Second Church of Christ, Scientist	Rochester	Gordon & Kaelber
General Electric Co.	Schenectady	
Post Office	Albany	
Wassaic State School	Wassaic	
Cohocton Grade School	Cohocton	
Gilbertsville School	Gilbertsville	
NORTH CAROLINA		
Post Office	Asheville	J. A. Wettmore
Duke University	Durham	Horace Trumbauer
NORTH DAKOTA		
Post Office	Fargo	J. A. Wettmore
OHIO		
Canterbury School	Cleveland	John H. Graham & Sons
Church of the Savior	Cleveland	Corbusier & Foster
Public Auditorium	Cleveland	H. Kregelius & J. H. McDowell
St. Ignatius Church	Cleveland	E. T. P. Graham
Standard Oil Co.	Cleveland	Graham, Anderson, Probst & White
Union Terminal Building	Cleveland	Graham, Anderson, Probst & White
Gallery of Fine Arts	Columbus	Richard McCarty & Bulford
Lake Erie College	Painesville	Abram Garfield
PENNSYLVANIA		
Erie County Courthouse	Erie	Walter T. Monahan
Stauffer Restaurant	Philadelphia	Hadlow, Hughes, Hicks & Conrad
KDKA Studios	Pittsburgh	Janssen & Cocken
TEXAS		
Parkway Theatre	Fort Worth	W. Scott Dunne
Village Theatre	Dallas	Fooshee & Cheek
Rialto Theatre	Dallas	Green, La Roche & Dahl
Paramount Theatre	Austin	W. Scott Dunne
Uptown Theatre	Houston	Jonas & Tabor
VIRGINIA		
Woodrow Wilson High School	Danville	
William and Mary College (Marshall Wythe Hall)	Williamstown	
WASHINGTON		
Sacred Heart Academy	Seattle	Wm. L. Smith
WISCONSIN		
Bell Telephone Building	Milwaukee	

THE Gold Bond HANDBOOK

ON INSULATION PRODUCTS FOR THERMAL INSULATION AND SOUND CONTROL

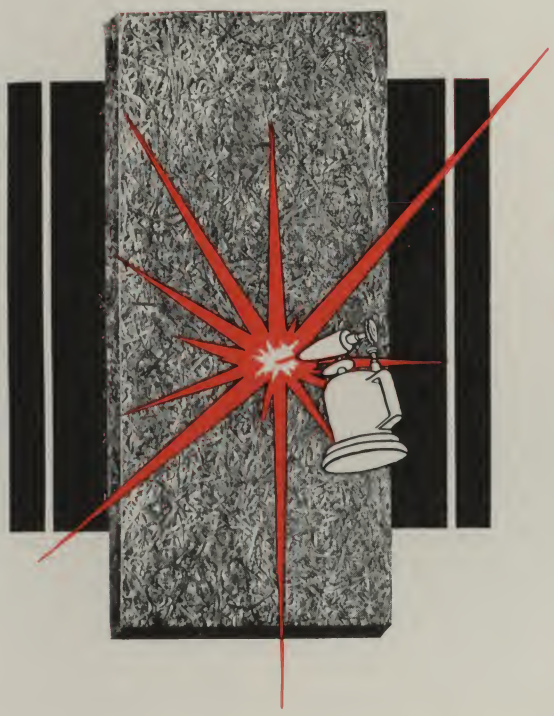
NATIONAL GYPSUM CO.—GENERAL OFFICES, BUFFALO, NEW YORK

THERMAX

The FIREPROOFING INSULATION

ABSORBEX

ACOUSTICAL CORRECTIVE



SPECIFICATIONS AND TECHNICAL DATA

1936 *Edition*

THERMAX

Made by

THERMAX DIVISION, NORTHWEST MAGNESITE CO.
FARMERS BANK BUILDING, PITTSBURGH, PA.

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FOREWORD

● **THERMAX—THE FIREPROOFING STRUCTURAL INSULATION**—Thermax, has been used extensively in continental Europe **since 1918** under the trade name of **Heraklith** and there has won recognition and ready acceptance in building industry.

This long period of actual demonstration under varied building and climatic conditions from Iceland to tropical Palestine has established the unique and practical characteristics of this insulation. Sales, world wide, to date have been over **300,000,000 board feet.** In the United States, Thermax has been made and marketed nationally for over five years.

The outstanding characteristics of Thermax are:

(1) **Insulation**—It ranks high in thermal insulation efficiency used in the thicknesses manufactured, namely 1 in., 2 in., and 3 in.

(2) **Fireproofing**—Tested and rated incombustible by the Underwriters' Laboratories, it is the only structural insulation board or slab possessing the qualification of fireproofing and so approved by City, State and Federal Departments.

(3) **Structurally Strong**—Thermax satisfies code requirements for incombustible, self-supporting insulating roof decks and non-bearing partitions, sheathing or lathing.

(4) **Sound-Deadening—**2 in. (3 in. overall) Thermax plastered partitions transmit less than one-fifth of one per cent of sound (99.82% reduction).

(5) **Sound Absorption**—Absorbex Acoustical Corrective, a Thermax product, combines high efficiency with incombustibility and an attractive, repaintable surface.

Due to these unique attributes, Thermax has received ready acceptance by architects in the United States and has been used from coast to coast in a noteworthy list of outstanding buildings.

● **THE COMPANY**—Thermax is a division of the Northwest Magnesite Company of Chewelah, Washington, which mines and calcines the largest output of magnesite in the United States. Magnesite is a high-temperature refractory material used extensively in the steel industry.

The Company is adequately financed to take care of all production requirements in connection with a nation-wide demand for Thermax materials.

● **MANUFACTURING FACILITIES**—The large, completely modern Thermax plant in Chewelah, Washington, is adjacent to that of the Northwest Magnesite Co. The Company, therefore, has complete control of every step in the manufacture of its products—first because its plant equipment is new and of the latest type and, second, because the plant is located in the heart of the source of its raw materials, timber and refractory cement. Thus is assured uniformity and economical production costs.

● **SERVICE**—The Company maintains an experienced engineering department in connection with its General Sales Office at Pittsburgh. In addition, it is nationally represented in the principal cities. All local representatives are experienced in the insulation and noise abatement fields and are qualified to cooperate (without obligation) with the architect in the establishment of basic requirements or the solution of their various problems.

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THERMAX DIVERSIFIED ADAPTABILITY

• FRAME BUILDING INSULATION—

(1) As Sheathing and Roof Decking—The full one (1) inch or two (2) inch thickness of structural Thermax as against ordinary $\frac{7}{16}$ in. or ½ in. fiberboard insulation is an economy. The added fuel savings and comfort more than compensate for any slight added cost. The fireproofing feature alone should influence its choice. Structurally it is an ideal sheathing and roof decking material.

As an exterior stucco base it is practically inert so far as contraction and expansion are concerned and the bond between the stucco and the Thermax surface is equal to that of the best masonry stucco base. Two (2) inch Thermax is recommended for stucco base because the effect, using standard brick veneer frames, is the same as in a masonry building with a masonry reveal (see detail, page 10).

(2) As Interior Plaster Base—On walls and ceilings it is an ideal fireproofing and sound-deadening plaster base—strong bond, no expansion or contraction. On basement ceilings it reduces the fire hazard to a minimum.

(3) As a Floor Slab—Where a composition floor (linoleum, asphalt tile, rubber tile, etc.) is practical or appropriate, Thermax (3 in. thickness) finished with a topping of Portland cement mortar (1 : 3 mix) troweled smooth, provides the structural sub-floor or base for these materials (maximum joist spacing 24 in. o.c.). It is also an ideal base for ceramic and other finishes.

So used, a cement floor in attics is economically practical and materially lessens fire risk.

Beside the benefits of heat insulation, sound deadening is an inherent quality of Thermax.

• INDUSTRIAL ROOF DECK INSULATION—Thermax units are high in insulation value in the three thicknesses marketed—1, 2, and 3 in.—and where required **over wood, concrete or steel roof decks** are laid in one operation in the required thickness—a labor economy. Thermax presents a firm insulating base for built-up roofing.

• FIREPROOF, INSULATING STRUCTURAL ROOF SLABS—Used as **precast roof slabs** in conjunction with steel roof framing, Thermax (2 and 3 in. thick) is easily and inexpensively erected and is a rigid base for built-up finished roofing on industrial buildings. The exposed underside may be painted with aluminum or light reflecting cold water or oil paint, producing an efficient, attractive, and inexpensive acoustical treatment for auditoriums, gymnasiums, armories and other structures where sound quieting is desired. It may also be plastered with gypsum, lime or cement plaster.

• FIREPROOF, INSULATING STRUCTURAL FLOOR AND CEILING SLABS—For use as **structural floor slabs** in residential construction in conjunction with **Steel Joists** and **Junior Beam** or **Steel Deck Constructions.** Light weight, structural strength, definite fireproofing, heat and sound insulation and an ideal base for cement, tile, terrazzo, and similar floor finishes are the salient characteristics.

Used as a 2 in. thick **fireproof ceiling slab,** it adds a practical and definite fire protection to these light steel constructions, hitherto difficult to accomplish. It provides a perfect plaster base or if painted only (unplastered), it is highly sound absorbent.

• FIREPROOF PARTITIONS (NON-BEARING)—

(1) 2 in. Thick with Steel Studs—Fulfills 1 hour fireproofing requirements, using 1 in. thick Thermax units clipped between 1-in. steel channels, plastered both sides (2 in. thick finished). These partitions are erected rapidly, dry out quickly, are light in weight and stable.

(2) 2 in. and 3 in. Thick Partition Blocks—Fulfills 1 and 2 hour fireproofing requirements, respectively. The Thermax units 2 and 3 in. thick x 20 in. wide x 32 or 64 in. long are easily handled due to their light weight. They are quickly erected with mortar (Portland cement, gypsum or lime) the same as gypsum or clay tile partition blocks and are plastered both sides, finishing 3 in. and 4 in. thick, respectively. Cutting and fitting are easily accomplished with ordinary tools.

• THERMAX PLANKS—Thermax slabs 2 and 3 in. thick and 20 in. wide may be obtained on special order in ceiling height lengths. Easily and rapidly erected with clips and plastered (no studs).

• NOISE ABATEMENT—

(1) Partitions—2, 3 and 4 in. thick Thermax block partitions have exceptional value for sound deadening or sound isolation purposes (see page 20 for test data).

(2) Acoustical Correction—Absorbex Acoustical Corrective is a highly efficient, incombustible sound absorptive. The Type C (standard Thermax slabs) may be laid in concrete floor construction forms, producing an economical ceiling acoustical correction.

The Type A or Type B Absorbex tile applied to walls or ceilings ranks high in sound absorption efficiency and harmonizes with any architectural treatment.

• LOW COST HOUSING CONSTRUCTION—The Thermax Division, Northwest Magnesite Co. has developed **fire-safe, insulated** and **vermin-proof** practical assembly designs to conform with various building requirements in the low cost housing field. Stock materials of steel, concrete, and Thermax Insulation are combined in simple assemblies, greatly reducing labor and erection costs, placing these more livable and salable houses in direct competition with ordinary, less permanent constructions.

THERMAX MANUFACTURING PROCESS

• **RAW STOCK**—Thermax is made by combining two basic materials—long, tough wood shreds which are completely coated with fire resisting cement. The cellular wood fibers alone have an established high insulation value, which is increased by the air containing interstices between the fibers when these are interlaced and cemented together.

• **DETAILS OF PROCESS**—Thermax is produced in one continuous mechanical operation that shreds the timber into long fibers; passes these fibers through a binding emulsion of fire resisting cement; rolls and forms this mass into boards or slabs exactly 1 in., 2 in., and 3 in. thick by 20 in. wide and dries and cuts the product into standard lengths.

PHYSICAL CHARACTERISTICS—ADVANTAGES

• **TESTS**—All data is substantiated by standard tests conducted by recognized authorities: Underwriters' Laboratories, Inc., U. S. Bureau of Standards, Columbia University, Massachusetts Institute of Technology, Pittsburgh Testing Laboratories, Riverbank Laboratories, Inc., etc.

• **SIZES**—

Thicknesses—Thermax is made 1, 2, and 3 in. thick. An axiom of insulation efficiency is that a sufficient thickness of insulation must be used. The outstanding advantage of Thermax as an insulating material is the greater thickness combined with structural strength at lower cost.

Area—Thermax in each thickness is made 20 in. wide x 32, 48, and 64 in. long. Longer lengths up to 9′0″ can be furnished on special order.

• **WEIGHT**—

1-in. Thermax—2.2 lbs. per sq. ft. (approx.).
2-in. Thermax—4.4 lbs. per sq. ft. (approx.).
3-in. Thermax—6.6 lbs. per sq. ft. (approx.).

• **FIREPROOFING—Thermax Passes Rigid Fire Tests. It has been Rated by Underwriters' Laboratories and Re-examination Service Maintained**

Thermax non-bearing partitions are approved for use in fireproof construction by the Boroughs of the City of New York as well as by the Building Departments of the leading cities in the United States and Europe and are rated without insurance penalty by the National Board of Fire Underwriters.

Thermax (Absorbex) is approved by building departments as incombustible trim in fireproof construction left exposed for acoustical treatment.

3-in. Partitions—Thermax 2 in. thick blocks laid up with mortar, plastered each side with ½ in. of plaster, satisfactorily passed the fire endurance and fire hose stream tests at the Underwriters' Laboratories at Chicago and is rated 1 hour incombustible for non-bearing partitions in fireproof construction.

4-in. Partitions—Thermax 3 in. thick masonry block partitions plastered two sides have passed the 2¼ hour fire endurance and hose stream tests in accordance with the current specifications of the American Society for Testing Materials. (Test conducted by the U. S. Bureau of Standards.)

The 3 in. plastered (4 in. finished) Thermax non-bearing partitions have passed the 1 hour fire endurance and hose stream tests required by the Building Departments of the Boroughs of the City of New York. (Tests conducted by Columbia University.)

2½-in. Partitions—1 in. Thermax Slabs, between steel studs 20 in. on center, plastered ¾ in. each side, successfully passed the Standard Fire Endurance and Fire Stream Test at U. S. Bureau of Standards for a one hour rating (non-bearing).

• **THERMAL CONDUCTIVITY**—The thermal conductivity of Thermax Fireproofing Insulation is slightly higher than combustible fiberboard insulations. However, the minimum thickness of Thermax is 1 in., whereas ordinary insulation boards as marketed are $\frac{7}{16}$ in. and ½ in. in thickness, resulting in an actual efficiency of one half or less of their rating based on the 1 in. thickness as tested.

The thermal conductivity of Thermax established by Prof. J. C. Peebles, Armour Institute (flat plate method) is:

1 in.—0.458 B.t.u. per hr., per sq. ft., per deg. F.
2 in.—0.229 B.t.u. per hr., per sq. ft., per deg. F.
3 in.—0.153 B.t.u. per hr., per sq. ft., per deg. F.

• **SOUND INSULATION**—Thermax has remarkable sound insulation properties. Tests made on 2 in. thick block partitions, plastered (base and finish coats), establish that the per cent of the incident sound transmitted through the construction is only 0.18% (less than $\frac{1}{5}$ of 1%) at a frequency of 512 cycles. (Massachusetts Institute of Technology.)

Thermax blocks or slabs are recommended for sound deadened partitions and sound isolation for machinery rooms, broadcasting studios, and sound filters, baffles and ducts in air conditioning systems. (See details and test data, page 20.)

• **MOISTURE RESISTANCE (CAPILLARITY)**—With one edge immersed in water, moisture in four (4) days rises to an average of but 3 in. in the slab. No further rise occurs for the next six (6) days. After drying, Thermax has the same strength as it had originally (University of Washington test). Non-absorption not only is essential to sanitation but to insulating efficiency.

• **STRUCTURAL STRENGTH**—Tests (Pittsburgh Testing Laboratory) determine that Thermax fulfills all practical requirements for roof decks.

Slabs were placed on flat supports spaced 24 in. or 16 in. o.c. and a central load applied over 1 in. x 3 in. plate in increments up to ultimate failure, deflections being measured and corresponding loads recorded.

The results of these tests showed that the maximum load per sq. ft. for 2 and 3 in. Thermax at 24 in. span between supports is 210 and 345 lbs., respectively and for 2 in. Thermax at 16 in. span is 765 lbs. per sq. ft. (for complete table of tests, see page 8).

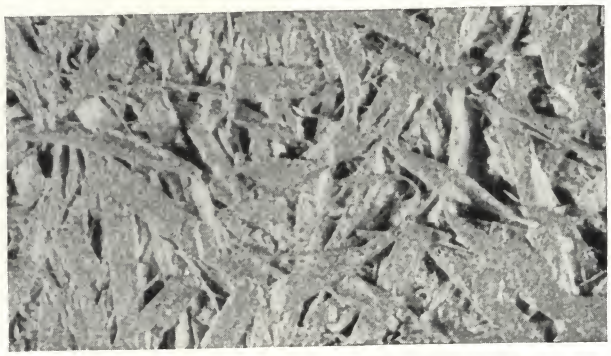
Impact—A 1 in. topping of Portland cement mortar was applied on top of 2 in. thick Thermax blocks. Samples were kept moist for one week, then thoroughly dried. The concrete topping was then subjected to 20,000 blows of 600 lbs. per sq. in. concentrated at one point. There was no cracking of the concrete topping or loosening of the bond between the concrete and Thermax slab (University of Washington).

• **FIRM ROOF FOUNDATION**—Where used as structural roof slabs or as insulation over roof decks, Thermax provides a firm surface as foundation for the application of built-up finished roofing. There is no danger of puncturing the finished roofing material under normal wear and tear.

• **EXPANSION AND CONTRACTION**—In Europe, Thermax (under the name of Heraklith) has been in use extensively for over seventeen years as an exterior stucco and interior plaster base. Installations here and abroad show no defects due to expansion or contraction of the base under the various climatic conditions encountered.

• **PORTLAND CEMENT STUCCO AND PLASTER BOND**—(Test conducted by Columbia University.) Sample Thermax Boards 1 in. thick, selected at random from stock, were securely attached to wood blocks furnished with exposed pull rings. The Thermax surfaces of each specimen, thus prepared, were bonded together with standard gypsum plaster. A series of six tests were made on slabs thus bonded resulting in an average of 317 lbs. per sq. ft. Failure in each case occurred by separation in the wood fibers. See also impact test above.

Note: 60 lbs. per sq. ft. is the accepted standard for bonding strength for gypsum plaster and 200 lbs. per sq. ft. for portland cement, poured in place (U. S. Government Specification).



A FULL SIZE SECTION OF THERMAX

• **STERILITY**—Made of clean, shredded wood, with each strand coated with high temperature cement, Thermax is odorless and affords no food value to attract insects. The cement coating successfully prevents attack by rodents.

• **TERMITE PROOF**—Thermax (under the name Heraklith) has been used under close observation for many years in tropical Europe in regions infested by the white ant or termite. No instance of termite damage has ever been discovered. The hard, refractory cement coating of every wood shred apparently resists termite attack.

• **CHEMICAL ANALYSIS**—Assurance that there is no deterimental corrosive effect when Thermax is erected in contact with steel is given in the following chemical analysis showing negligible magnesium chloride. (Test by Penniman and Browne, Consulting Chemists, Baltimore.)

The water soluble content of Thermax is but 4.39% of the total weight consisting largely of alkaline material arranged as follows:

Magnesium sulphate	92.71%
Magnesium chloride	1.48%
Calcium hydrate	5.80%

• **DURABILITY—FUNGI PROOF**—In addition to being moisture resistant, the cement coated wood shreds in Thermax are definitely sealed against attack by fungus growth. Under actual use abroad for many years no instance of deterioration has been discovered. (Vienna Technical Society report.)

Dry Rot tests conducted in U. S. by University of Idaho (Forestry Dept.) give Thermax a 100% rating against fungus.

• **UNIFORMITY**—Uniformity of raw materials, complete laboratory control and rigid factory supervision plus Re-examination Service by the Underwriters' Laboratories assure a uniform product.

• **REASONABLE COST**—Compared with other insulation of equal thickness or efficiency, but lacking the fire-resisting and structural characteristics of Thermax, the cost of Thermax is low.

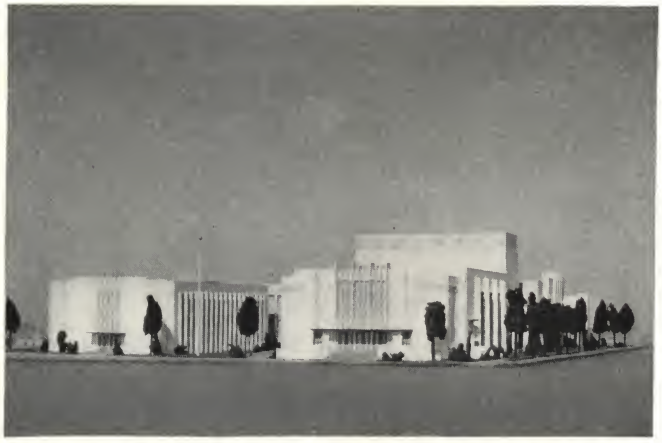
• **LOW LABOR INSTALLATION COST**—Thermax is easily and rapidly erected by the ordinary mechanic. It saws like lumber where fitting is required. The light weight of the units makes one man handling convenient and the large boards or slabs with a surface area of approximately 1 sq. yd. combines speed with economy.

TYPICAL INSTALLATIONS

TIMES BUILDING, LOS ANGELES, CALIF.
Architect—Gordon B. Kaufman
Thermax Fireproof Structural Slabs for Insulation and Sound-deadening

THERMAX FIRE-SAFE HOUSE, PITTSBURGH, PA.
Designer—Q. S. Beck
Thermax Walls, Floors, Partitions and Roof

STEEL FRAME AND THERMAX RESIDENCE
Architect—Hillard Russell
Thermax Structural Insulation for Exterior Sheathing and Stucco Base



ALEXANDER HAMILTON, JR. HIGH SCHOOL, LONG BEACH, CALIF.
Architects and Engineers—Schilling and Schilling
Steel Frame, 1 in. Thermax Exterior Stucco and Interior Plaster Bases

MELLON INSTITUTE, PITTSBURGH, PA.
Architect—Janssen and Cocken
Absorbex Type "A" Tile for Acoustical Corrective

YALE CLUB, NEW YORK CITY
Architect—Fuller and Dick
Tap Room—Acoustical Ceiling of Absorbex Type A

TYPICAL INSTALLATIONS

EAST LIBERTY PRESBYTERIAN CHURCH, PITTSBURGH, PA.
Architects—Cram and Ferguson, Boston
Thermax Sound-Deadening and Thermal Insulation;
Absorbex Type A Acoustical Treatment

ROCKEFELLER CENTER, NEW YORK CITY
Non-Inflammable Thermax in Air Conditioning Systems in Radio City Music Hall and Center Theatre
Architects—Rheinhard and Hofmeister; Corbett, Harris and MacMurray; Hood and Foulihoux

DEPARTMENT OF JUSTICE BUILDING, WASHINGTON, D. C.
Absorbex Acoustical Corrective for Courtrooms

UNITED STATES CUSTOMS HOUSE AND APPRAISER'S STORES
PHILADELPHIA, PA.
Absorbex Acoustical Treatment applied to Thermax Base

HEAT TRANSMISSION COEFFICIENTS
As Applied to Various Standard Constructions

TABLE I. H.T.C. of Pitched Residential Roofs

No.	Type of roofing	Insulation over rafters	Type of ceiling and plastering			
			None	Wood lath	1 in. Ther.	2 in. Ther.
1	Wood shingles	None	0.48	0.29	0.15	0.10
2	Composition r'f'g	None	0.56	0.32	0.16	0.11
3	Slate or tile r'f'g	None	0.56	0.32	0.16	0.11
4	Wood shingles	1 in. Ther.	0.24	0.15	0.10	0.09
5	Wood shingles	2 in. Ther.	0.16	0.12	0.09	0.08
6	Composition r'f'g	1 in. Ther.	0.32	0.17	0.13	0.11
7	Composition r'f'g	2 in. Ther.	0.24	0.14	0.11	0.09
8	Slate or tile r'f'g	1 in. Ther.	0.32	0.17	0.13	0.11
9	Slate or tile r'f'g	2 in. Ther.	0.24	0.14	0.11	0.09

TABLE II. H.T.C. of Frame Walls

No.	Sheathing	Plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	1 in. Wood	0.25	.....	.....
2	1 in. Wood	.....	0.17	.....
3	1 in. Wood	.....	.....	0.11
4	1 in. Thermax	0.20	.....	.....
5	1 in. Thermax	.....	0.14	.....
6	1 in. Thermax	.....	.....	0.10
7	2 in. Thermax	0.12	.....	.....
8	2 in. Thermax	.....	0.10	.....
9	2 in. Thermax	.....	.....	0.08

TABLE III. H.T.C. of Stucco over Frame Walls

No.	Sheathing	Plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	1 in. Wood	0.30	.....	.....
2	1 in. Wood	.....	0.19	.....
3	1 in. Wood	.....	.....	0.12
4	1 in. Thermax	0.23	.....	.....
5	1 in. Thermax	.....	0.16	.....
6	1 in. Thermax	.....	.....	0.12
7	2 in. Thermax	0.14	.....	.....
8	2 in. Thermax	.....	0.11	.....
9	2 in. Thermax	.....	.....	0.09

TABLE IV. H.T.C. of Brick Veneer over Frame Walls

No.	Sheathing	Plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	1 in. Wood	0.27	.....	.....
2	1 in. Wood	.....	0.18	.....
3	1 in. Wood	.....	.....	0.12
4	1 in. Thermax	0.20	.....	.....
5	1 in. Thermax	.....	0.15	.....
6	1 in. Thermax	.....	.....	0.10
7	2 in. Thermax	0.13	.....	.....
8	2 in. Thermax	.....	0.10	.....
9	2 in. Thermax	.....	.....	0.09

TABLE V. H.T.C. of Stucco on Hollow Clay Tile Walls

No.	Interior construction	Thickness of hollow tile		
		8 in.	10 in.	12 in.
1	½ in. plaster direct on tile	0.37	0.37	0.29
2	½ in. pl. on wood lath, furred	0.26	0.26	0.22
3	½ in. pl. on 1 in. Thermax on tile	0.20	0.19	0.17
4	½ in. pl. on 2 in. Thermax on tile	0.13	0.13	0.12
5	½ in. pl. on 1 in. Thermax; furred	0.16	0.16	0.14
6	½ in. pl. on 2 in. Thermax; furred	0.11	0.11	0.10

TABLE VI. H.T.C. of 4 in. Br. Veneer on H.C. Tile Walls

No.	Interior construction	Thickness of hollow tile		
		6 in.	8 in.	10 in.
1	½ in. plaster direct on tile	0.34	0.33	0.32
2	½ in. pl. on wood lath; furred	0.24	0.24	0.23
3	½ in. pl. on 1 in. Thermax on tile	0.17	0.18	0.18
4	½ in. pl. on 2 in. Thermax on tile	0.13	0.12	0.12
5	½ in. pl. on 1 in. Thermax; furred	0.15	0.15	0.14
6	½ in. pl. on 2 in. Thermax; furred	0.11	0.11	0.10

TABLE VII. H.T.C. of Solid Brick Walls

No.	Interior construction	Thickness of brick	
		8 in.	12 in.
1	½ in. plaster direct on brick	0.46	0.34
2	½ in. plaster on wood lath; furred	0.30	0.24
3	½ in. plaster on 1 in. Thermax on brick	0.23	0.20
4	½ in. plaster on 2 in. Thermax on brick	0.15	0.13
5	½ in. plaster on 1 in. Thermax; furred	0.20	0.18
6	½ in. plaster on 2 in. Thermax; furred	0.12	0.11

TABLE VIII. H.T.C. of Solid Concrete Walls

No.	Interior construction	Thickness of concrete	
		6 in.	10 in.
1	½ in. plaster direct on concrete	0.70	0.57
2	½ in. pl. on wood lath; furred	0.39	0.34
3	½ in. pl. on 1 in. Thermax on concrete	0.28	0.25
4	½ in. pl. on 2 in. Thermax on concrete	0.16	0.15
5	½ in. pl. on 1 in. Thermax; furred	0.22	0.20
6	½ in. pl. on 2 in. Thermax; furred	0.13	0.12

TABLE IX. H.T.C. of Flat Concrete Roofs

No.	Kind of insulation	Thickness of concrete		
		2 in.	4 in.	6 in.
1	None	0.82	0.72	0.64
2	1 in. Thermax	0.30	0.28	0.26
3	2 in. Thermax	0.16	0.16	0.15
4	3 in. Thermax	0.13	0.12	0.12

TABLE X. H.T.C. of Flat Wood Roofs—No Ceilings

No.	Kind of insulation	Thickness of wood			
		1 in.	1½ in.	2 in.	4 in.
1	None	0.49	0.37	0.32	0.23
2	1 in. Thermax	0.24	0.21	0.19	0.15
3	2 in. Thermax	0.14	0.13	0.12	0.11
4	3 in. Thermax	0.12	0.11	0.10	0.09

TABLE XI. H.T.C. of Flat Wood Roof Decks, with Ceilings

No.	Kind of insulation	Thickness of wood deck			
		1 in.	1½ in.	2 in.	4 in.
1	None	0.32	0.26	0.24	0.18
2	1 in. Thermax	0.19	0.17	0.15	0.13
3	2 in. Thermax	0.12	0.11	0.11	0.09
4	3 in. Thermax	0.10	0.09	0.09	0.08

TABLE XII. H.T.C. of Flat Concrete Roofs, with Ceilings

No.	Kind of insulation	Thickness of concrete		
		2 in.	4 in.	6 in.
1	None	0.42	0.40	0.37
2	1 in. Thermax	0.23	0.22	0.21
3	2 in. Thermax	0.14	0.13	0.13
4	3 in. Thermax	0.11	0.11	0.10

TABLE XIII. H.T.C. of Flat Steel Roofs

No.	Kind of insulation	Flat steel roof deck
1	None	0.95
2	1 in. Thermax	0.33
3	2 in. Thermax	0.17
4	3 in. Thermax	0.13

TABLE XIV. H.T.C. of Flat Steel Roofs, with Ceilings

No.	Kind of insulation	Steel roof deck
1	None	0.46
2	1 in. Thermax	0.23
3	2 in. Thermax	0.14
4	3 in. Thermax	0.11

TABLE XV. H.T.C. of Residential Ceilings

No.	Attic flooring	Type of plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	None	0.62	0.30	0.16
2	1 in. Wood	0.28	0.20	0.12

Note: The various coefficients given in the tables on this and previous page have been determined in accordance with the method employed in the 1935 "Guide" of the American Society of Heating and Ventilating Engineers. The thermal conductivity of Thermax employed throughout the calculation is 0.46 B.t.u.'s per 1 in. thickness, per hour, per sq. ft., per degree F. difference in temperature between the surfaces. (Prof. J. C. Peebles—Armour Institute).

STRENGTH OF THERMAX DECKS
Uniformly Distributed Loads for 2 and 3 inch Thick Slabs

Slab thickness	Span between support c. to c.	Slab area between supports	Ultimate total load	Equivalent uniformly distributed load	Maximum load per sq. ft.	Modulus of rupture lbs. per sq. in.	Average ultimate load center deflection*
3 in.	24 in.	3.33 sq. ft.	575 lbs.	1150 lbs.	345 lbs.	115 lbs.	.327 in.
2 in.	24 in.	3.33 sq. ft.	350 lbs.	700 lbs.	210 lbs.	158 lbs.	.314 in.
2 in.	16 in.	2.22 sq. ft.	850 lbs.	1700 lbs.	765 lbs.	255 lbs.	.236 in.

*Note: Deflections shown are not permanent. Permanent deflections in all cases are within allowable limits.

THERMAX ROOF DECKS—40 LBS. LIVE LOAD
Weight of Purlin and Rafter System for Various Spacings

Trusses c. c.	16′ 0″					20′ 0″					24′ 0″					Size of Thermax tees 2′ 0″ c. c.
Purlins c. c.	A		B	C	D	A		B	C	D	A		B	C	D	
		Lbs.	Lbs.	Lbs.	Lbs.		Lbs.	Lbs.	Lbs.	Lbs.		Lbs.	Lbs.	Lbs.	Lbs.	
5′ 6″	5″ I	10.	1.94	1.64	3.58	7″ I	15.3	2.98	1.64	4.62	8″ I	18.4	3.55	1.64	5.19	4″
6′ 0″	6″ I	12.5	2.20	1.64	3.84	7″ I	15.3	2.73	1.64	4.37	8″ I	20.5	3.60	1.64	5.24	4″
6′ 6″	6″ I	12.5	2.03	2.24	4.27	8″ BI	17.5	2.86	2.24	5.10	8″ I	20.5	3.32	2.24	5.56	5″
7′ 0″	6″ I	12.5	1.90	2.24	4.14	8″ BI	17.5	2.65	2.24	4.89	9″ I	21.8	3.27	2.24	5.51	5″
7′ 6″	6″ I	14.75	2.09	2.24	4.33	8″ BI	17.5	2.47	2.24	4.71	8″ CI	24.0	3.34	2.24	5.58	5″
8′ 0″	7″ I	15.3	2.04	2.24	4.28	8″ BI	17.5	2.31	2.24	4.55	8″ CI	24.0	3.13	2.24	5.37	5″
8′ 6″	7″ I	15.3	1.92	2.94	4.86	8″ I	18.4	2.28	2.94	5.22	8″ CI	24.0	2.94	2.94	5.84	6″
9′ 0″	7″ I	15.3	1.81	2.94	4.75	9″ I	21.8	2.54	2.94	5.48	8″ CI	24.0	2.78	2.94	5.72	6″

A—Size of purlin and weight per lineal foot.
B—Purlin weight per square foot of roof.
C—Rafter weight per square foot of roof.
D—Total weight purlin and rafter system per square foot of roof.

THERMAX ROOFING TEES
I—Moment of Inertia. S—Section Modulus

Section	Flange	Depth	Weight per ft.	I	S
6 in.	3.06 in.	5.75 in.	5.87	5.22	1.390
5 in.	2.69 in.	4.75 in.	4.48	3.04	0.917
4 in.	2.28 in.	3.75 in.	3.27	1.25	0.472

THERMAX SIZES AND WEIGHTS

Thickness . . . . . 2 in.—3 in.
Weights (lbs. per sq. ft.) . . . . . 4.4 —6.6
Lengths . . . . . 64 in. (longer up to 9 ft. on special order)
Width . . . . . All sizes 20 in. wide

THERMAX AS SHEATHING AND ROOF DECKING

Specifications

Use on Walls Under Wood Siding, Shingles, Stucco or Masonry Veneer
Use on Sloping Roofs Under Shingles, Slate, Tile or Similiar Rigid Roof Units Which May Be Laid Over Wood Furring Strips

Note: For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see page 10.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

Note: Here list and locate definitely the wall and roof areas to be covered. If both 1 in. and 2 in. thicknesses are used, list separately and the respective locations or areas covered.

(2) MATERIAL

(Sheathing) (and) (roof decking) shall be Thermax Insulating Board as made by Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa. Boards shall be full **(1 in.) (and) (2 in.)** thick **(as above designated)**, 20 in. wide by 64 in. long.

(3) APPLICATION

(3a) GENERAL—Continuity of insulation is imperative. Apply Thermax boards with the length at right angles to the framing members. End joints (except at corners, openings, etc.) shall center over framing members. Break end joints in alternate courses.

(3b) SPACING—Thermax boards shall be brought to moderate contact at all joints and intersections and with window and door frames and trim **(and with gables and parapet walls)**. Do not force Thermax into place.

(3c) NAILS—

(3c1) Use 8d common **(cement coated)** nails with 1 in. galvanized roofing washers or 8d large headed foundry nails for 1 in. Thermax.

(3c2) Use 16d common **(cement coated)** nails with 1 in. galvanized roofing washers or 16d large headed foundry nails for 2 in. Thermax.

(3d) NAILING—First nail Thermax to intermediate framing members and then nail the ends on all framing members spaced three (3) nails, approximately 9 in. apart. On ends four (4) nails shall be used nailed approximately 5/8 in. from the edge.

UNITED ASSOCIATES HOMES, INC., MINEOLA, L. I.
Architect—William P. LaVallee
Thermax Insulation for Sheathing, Stucco and Plaster Base

(4) SUPPLEMENTARY PROVISIONS

Note: Provide for the following in other specification divisions.

(4a) CONSTRUCTION—Framing shall be in accordance with the recommendations of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

(4b) WATERPROOF PAPER—Cover all exterior Thermax surfaces **(except those under stucco)** with **(specify brand)** waterproof building paper. Lap at least 2 in. at all joints and secure, through the insulation to framing members with nails driven through galvanized washers.

(4c) FURRING STRIPS—

(4c1) Provide 1x3 in. furring strips properly spaced over Thermax to take **(wood siding) (shingles) (slate) (tile) (specify) (wall) (and) (roof)** covering. Strips shall be laid **(directly over and parallel with the framing members for wood siding) (and) (at right angles to the framing members for shingles, etc.)** and nailed to each bearing.

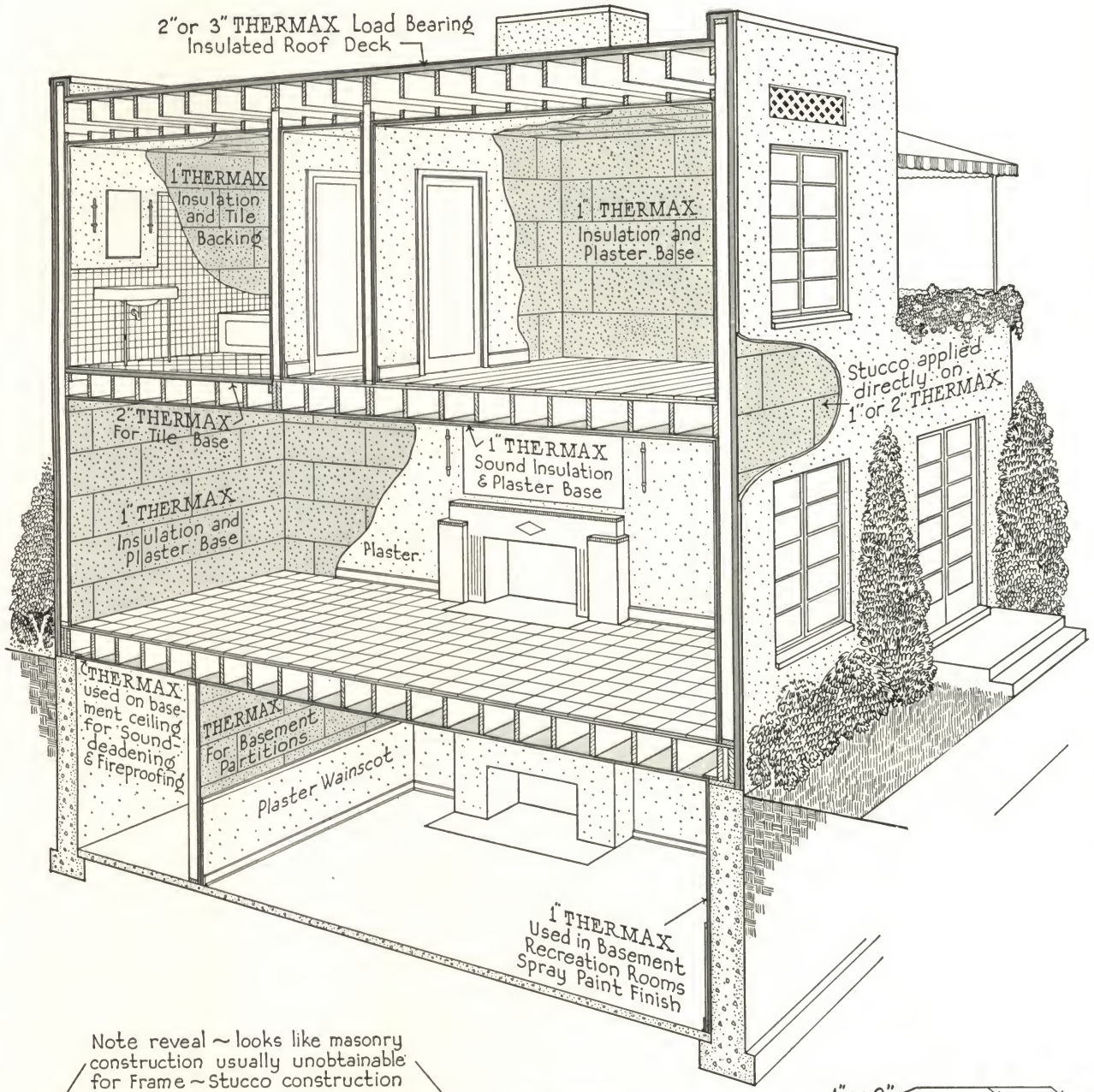
(4c2) Furring nails shall be sufficiently long to pass through the furring and Thermax to penetrate the framing members at least 1 in.

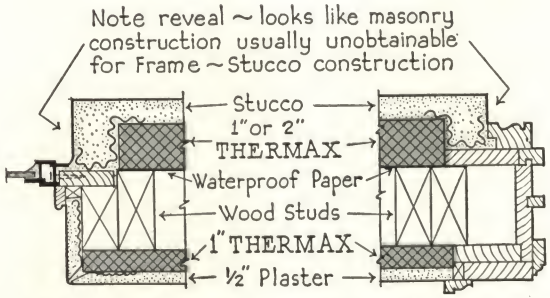
(4d) WOOD SIDING—All joints shall butt over the center of a furring strip.

(4e) MASONRY VENEER TIES—Provide **(specify type)** galvanized masonry ties at each stud spaced approximately 16 in. apart vertically. Nails shall be sufficiently long to pass through the Thermax and penetrate the stud at least 1 in.

(4f) EXTERIOR STUCCO—Apply the exterior stucco approximately 1 in. thick directly to the Thermax in accordance with the manufacturer's standard specification for application over masonry base. Do not wet the Thermax surface before applying the stucco.

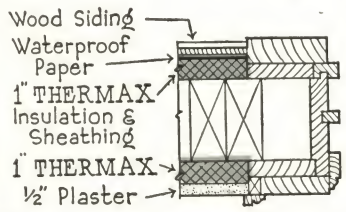
THERMAX IN RESIDENTIAL CONSTRUCTION



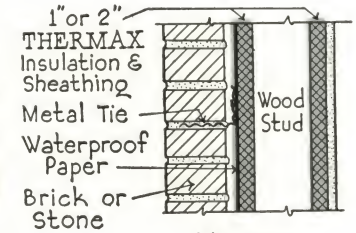


Metal Window in Stucco on Frame Building

Standard Window Frame & Brick Mold For Stucco on Frame Buildings



Standard Window Frame For Frame Buildings



Masonry Veneer Construction

THERMAX AS INTERIOR PLASTER BASE

Specifications

Use as an Insulating Plaster Base

Note: *For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see pages 10 and 12.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.*

(1) WORK INCLUDED

Note: *Here list and locate definitely the wall and ceiling areas to be covered. If both 1 in. and 2 in. thicknesses are used, list separately and the respective locations or areas covered.*

(2) MATERIAL

Plaster base shall be Thermax Insulating Board as made by Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa. Units shall be full **(1 in.) (and) (2 in.)** thick **(as above designated)**, 20 in. wide by 64 in. long.

(3) APPLICATION ON FRAME CONSTRUCTION

(3a) GENERAL—Apply Thermax boards with length at right angles to the framing members. End joints shall center over framing members. Stagger end joints in successive courses on all walls and ceilings; likewise stagger end joints at juncture of walls and ceilings.

(3b) SPACING—Thermax Board Units shall be brought to moderate contact at all joints and with window and door frames. Do not force Thermax into place.

(3c) NAILS—

(3c1) Use 8d common **(cement coated)** nails with 1 in. galvanized roofing washers or 8d large headed foundry nails for 1 in. Thermax units.

(3c2) Use 16d common **(cement coated)** nails with 1 in. galvanized roofing washers or 16d large headed foundry nails for 2 in. Thermax units.

(3d) NAILING—Space three (3) nails approximately 9 in. apart on centers on each bearing and four (4) nails approximately ⅝ in. from the edges at ends. First nail to intermediate framing members and then at ends.

(4) APPLICATION ON MASONRY WALLS

(4a) GENERAL—Nail Thermax to wood furring strips (spaced 16 in. o.c. for 1 in. Thermax—32 in. o.c. for 2 in.) or apply Thermax Boards to the masonry with **(Emulsified Asphalt) (½ in. thick backing of waterproofing Portland cement mortar)**. Stagger end joints in successive courses.

Note: *Emulsified Asphalt is advocated since this not only thoroughly bonds the Thermax to the masonry, but also seals the masonry against air infiltration or moisture due to capillarity.*

(4b) BACKING—

Note: *Select either (4b1) or (4b2) backing as best adapted.*

(4b1) Asphalt—Apply a heavy coat of high grade emulsified asphalt in which clay is used as the emulsifying agent and containing not less than 60% of asphalt **(specify)** approximately ⅛ in. thick **(sprayed) (troweled)** onto the thoroughly cleaned masonry wall.

(4b2) Cement Mortar—Apply a ½ in. thick backing of fresh Portland cement mortar (1 to 2 mix) to the thoroughly cleaned masonry wall.

(4c) ERECTING THERMAX—Apply the Thermax Boards against the backing while plastic with sufficient pressure to assure a thorough bond. Units shall be set in moderate contact, with exposed faces in a true vertical plane. Do not force Thermax into place. Cut and fit Thermax tight against all wood grounds attached to masonry (see 5b2).

(5) SUPPLEMENTARY PROVISIONS

Note: *Provide for the following in other specification divisions.*

(5a) CONSTRUCTION—Framing shall be in accordance with the recommendations of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

(5b) GROUNDS—

(5b1) For Frame Construction—Furnish and erect, substantially secured to framing members through the Thermax, ½ in. grounds to receive all woodwork trim.

(5b2) For Un-Furred Masonry Construction—Furnish and erect, substantially secured to the masonry, grounds the thickness of the insulation to which, after the insulation has been erected, shall be secured ½ in. grounds to receive all woodwork trim.

(5b3) For Furred Masonry Construction—Furnish and erect, substantially secured to furring strips through the Thermax, ½ in. grounds to receive all woodwork trim.

(5c) PLASTERING—

(5c1) Caution—Do not wet Thermax before applying plaster.

(5c2) Plaster—Use gypsum cement, gypsum wood fiber or lime plasters for scratch and brown coat.

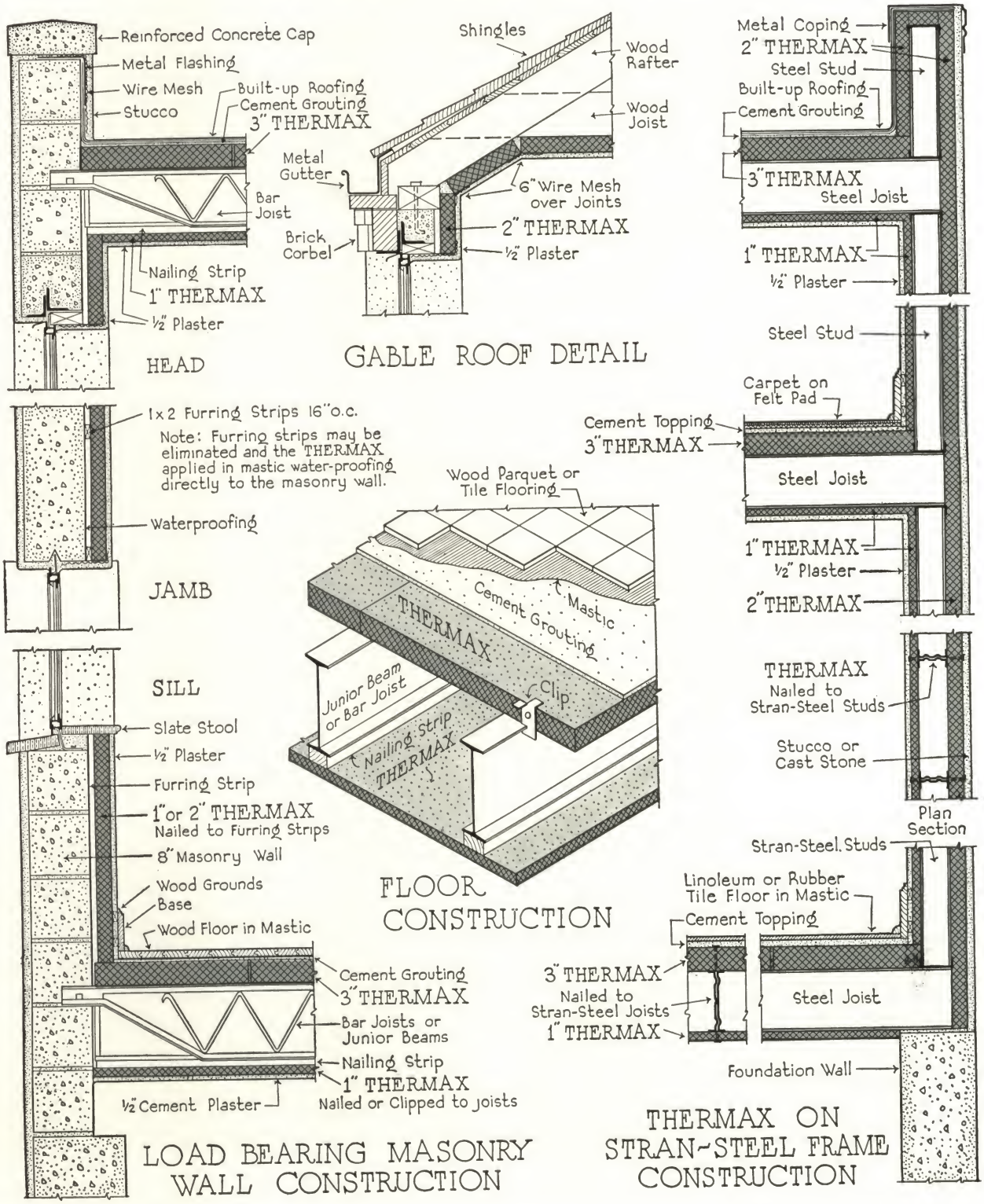
(5c3) Thickness—Full ½ in. thick.

(5c4) Application—Apply plaster in three (3) coats (scratch, brown and finish) in accordance with the plaster manufacturer's specifications. Surfaces shall be rodded to a true plane. All corners and angles shall be plumb and true. Wherever necessary and particularly on ceilings, provide plaster screeds to insure a uniform full plaster thickness.

(5c5) Ventilation—Provide adequate ventilation for the proper drying and curing of the plaster work.

THERMAX HOUSING DEVELOPMENT DETAILS

Fire—Safe—Insulated—Vermin-Proof



THERMAX INSULATING STRUCTURAL ROOF SLABS

Specifications

Use on Flat or Pitched Roofs as a Structural Insulating Precast Slab Applied Over Structural Steel or Wood Roof Framing

Note: For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see page 14.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

Note: Here list and locate definitely the roof areas to be constructed of Thermax Slabs. If both 2 in. and 3 in. thicknesses are used, list separately and the respective location or areas.

(2) MATERIAL

(2a) ROOF SLABS—Roof slabs shall be Thermax Insulative Structural Roof Slabs as made by Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa. Slabs shall be full **(2 in.) (and) (3 in.)** thick **(as above designated)**, 20 in. wide by **(64 in.) (72 in.) (96 in.)** long.

(2b) CLIPS—Clips for attaching Thermax Slabs to the structural steel supporting Ts shall be Thermax Galvanized Roofing Clips.

(3) LAYING ROOF SLABS

Thermax Roof Slabs shall be laid at right angles to the steel framing Ts and fastened with Thermax Clips at each T. Clips shall be secured in place with galvanized nails driven into the Thermax. Ends of units shall rest on steel rafters with the joint between adjacent slabs centered over the T. Sufficient clips shall be applied at eaves and ridges to form soldering grounds for sheet metal work.

Thermax slabs shall be brought to moderate contact. Do not force Thermax into place. Break end joints in alternate rows. Grout all joints with Portland cement mortar (1:3 mix) and brush or screed a skim coat of thick consistency over the entire surface before applying built-up roofing. **Protect Thermax Roof Slabs from rain and snow until waterproof roofing is applied.**

(4) FINISHED ROOFING

Finished roofing shall be applied over the Thermax Roof Slabs in accordance with the roofing manufacturer's specifications.

Note: A standard built-up 4 or 5-ply roof is recommended.

(5) SUPPLEMENTARY PROVISIONS

Note: Provide for the following in other specification divisions.

(5a) STEEL ROOF CONSTRUCTION—Design and strength of framing to support Thermax Roof Slabs shall be in accordance with the engineering data pertaining to span and thickness of slab units furnished by the Thermax Division, Northwest Magnesite Co. to sustain the specified live and dead loads.

The steel, its fabrication and its protection shall be in accordance with the Standard Specifications of the American Institute of Steel Construction.

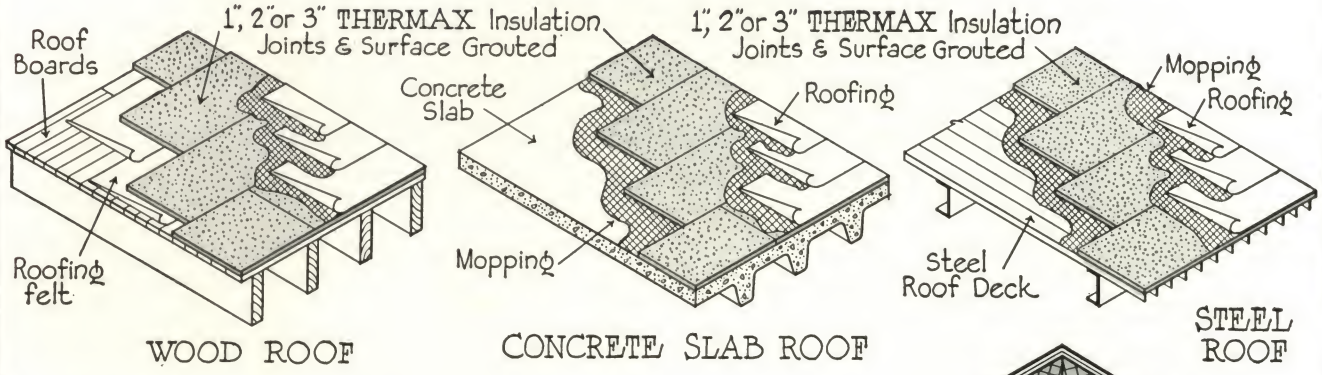
(5b) PAINTING—The exposed underside of the Thermax Roof Slabs shall be **(spray) (brush)** painted with **(specify brand) (aluminum paint) (light reflecting cold water or oil paint) (specify).**

(5c) PLASTERING—The exposed underside of the Thermax Roof Slabs shall be plastered with a thin coat of **(gypsum or lime plaster) (white Portland cement tempered with hydrated lime) (specify).**

PHENIX BOX AND LABEL COMPANY, KANSAS CITY, MO.
Applying Built-up Roofing over Thermax Insulated Roof Deck

FIFTH REGIMENT ARMORY, BALTIMORE, MD.
Thermax Laid in Tees Used as Roof Deck and Acoustical Treatment

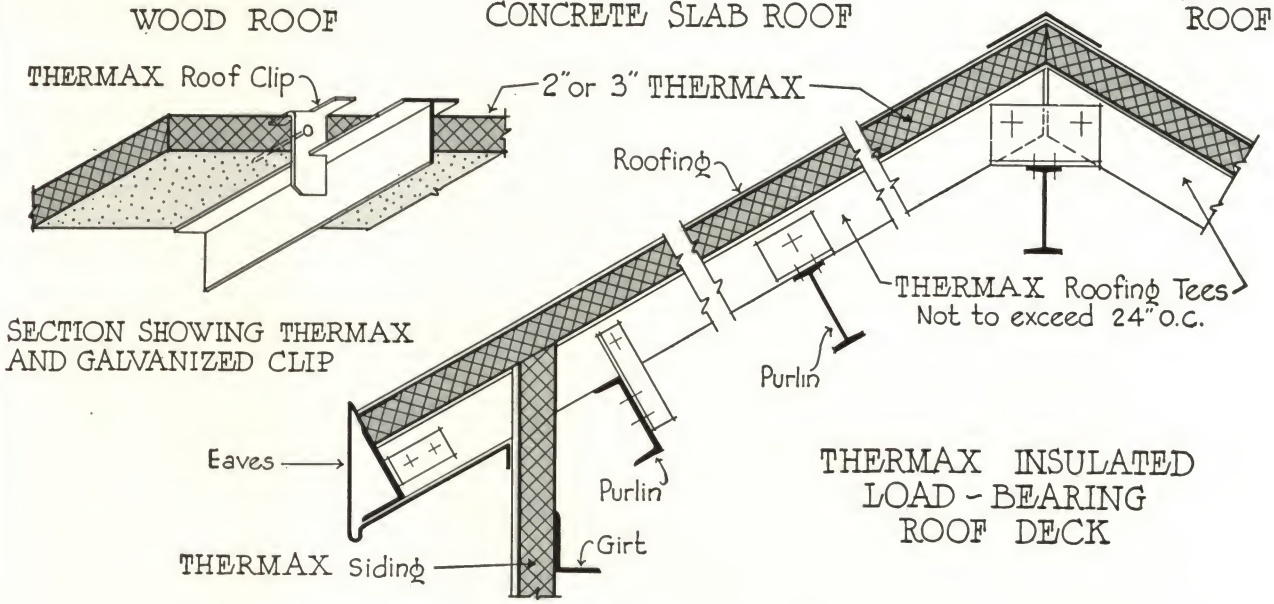
THERMAX INSULATED ROOFS AND CEILINGS



WOOD ROOF

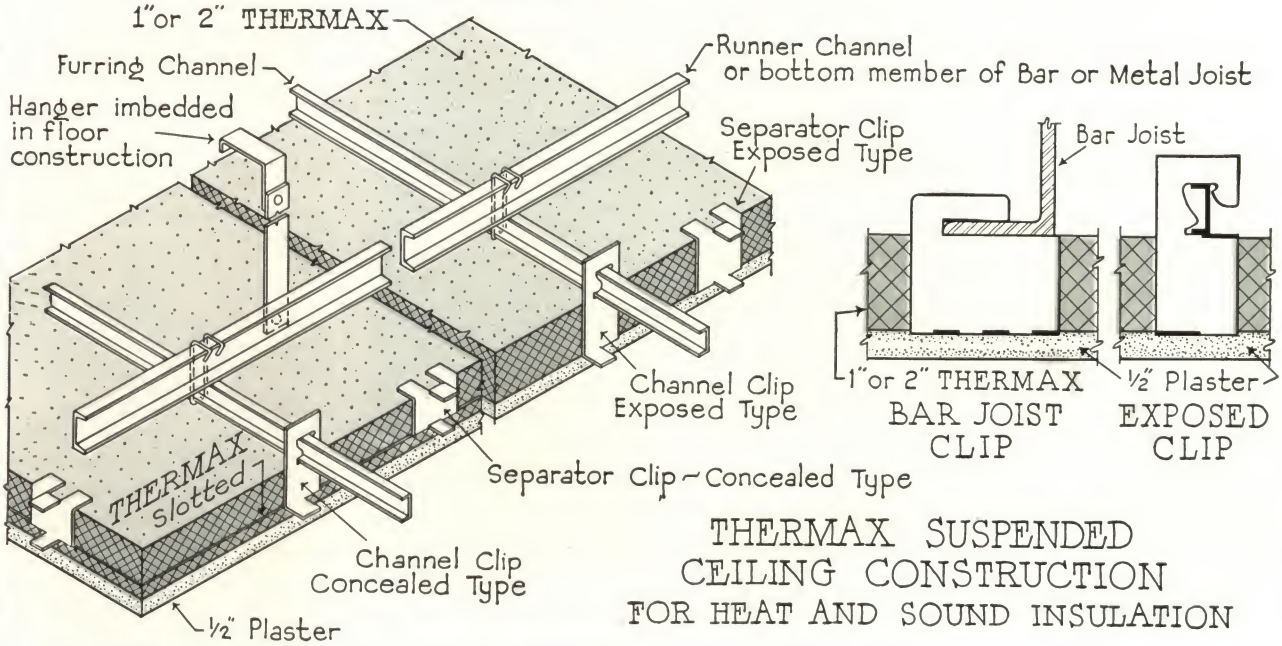
CONCRETE SLAB ROOF

STEEL ROOF



SECTION SHOWING THERMAX AND GALVANIZED CLIP

THERMAX INSULATED LOAD-BEARING ROOF DECK



BAR JOIST CLIP

EXPOSED CLIP

THERMAX SUSPENDED CEILING CONSTRUCTION FOR HEAT AND SOUND INSULATION

THERMAX INSULATING STRUCTURAL FLOOR AND CEILING SLABS

Specifications

Use for Fireproof Construction in Conjunction with Bar Joists, Metal Joists and Junior Beam Constructions

Note: For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For Engineering Data, see page 8. For details, see page 14.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

Note: Here list and locate definitely the floor and ceiling areas to be covered. If more than one thickness is used, list separately and the respective locations or areas covered.

(2) CONSTRUCTION

The **(floors) (and) (ceilings)** are constructed **(by others) (specify)** of **(specify type of joist)** spaced **(specify)** as noted on plans.

Note: Maximum joist spacing, 24 in. o. c.

(3) MATERIALS

(3a) SLAB MATERIAL—(Floor) (and) (ceiling) slabs shall be Thermax as made by Thermax Division, Northwest Magnesite Co., Pittsburgh, Pa.

(3b) FLOOR SLABS—Floor slabs shall be 3 in. thick x 20 in. wide x 48, 64 or 72 in. long.

(3c) CEILING SLABS—Ceiling slabs shall be **(1 in.) (2 in.)** thick x 20 in. wide x 48 or 64 in. long.

Note: Select thickness with regard to fireproofing required by local ordinances.

(3d) FLOOR SLAB ATTACHMENT—Special Thermax galvanized clips adapted to fit the top flange of the steel construction or nail Thermax directly to Nailer Joists.

(3e) CEILING SLAB ATTACHMENT — Special Thermax galvanized clips or nail Thermax directly to Nailer Joists.

AUDITORIUM ROOF CONSTRUCTION
Thermax Laid in Ts Used as Deck and Acoustical Treatment

(4) LAYING THE FLOOR SLABS

Thermax Floor Slabs shall be laid at right angles to the joists and fastened by Thermax Clips. Clips shall be secured in place with galvanized nails driven into the Thermax. Ends of units shall rest on joists with the joint between adjacent slabs centered over the flange. Thermax slabs shall be brought to moderate contact. Do not force Thermax into place. Break end joints in alternate rows. Grout all joints with Portland cement mortar (1:3 mix) or nail Thermax directly to Nailer Joists.

Note: Specify elsewhere the finish to be applied over the structural slabs. Use cement mortar (1:3 mix) for cement finish. Terrazzo finish 1½ in. thick may be applied directly over the slab.

(5) ERECTING SLABS, SUSPENDED CEILING CONSTRUCTION

(5a) RUNNER CHANNELS—(Specify Construction, Spacing and Suspension).

(5b) CROSS-FURRING—Apply cross-furring at right angles to the **(runner channels) (joists)**, 16 in. o. c. substantially secured to the flange.

(5c) Ceiling slabs shall be erected at right angles to the cross-furring. Thermax slabs shall be brought to moderate contact. Do not force Thermax into place. Break end joints in alternate rows centering these over the center of the cross-furring member.

Slabs shall be secured to the cross-furring in accordance with the Standard Thermax Suspended Ceiling Detail with **(concealed) (exposed)** channel clips hung over each cross-furring member. Midway between each channel clip on the long edges of the slabs install a **(concealed) (exposed)** separator clip. Install (2) **(concealed) (exposed)** separator clips at all slab end butt joints.

Note: Slabs may be plastered with gypsum or lime plaster in accordance with the plaster manufacturer's standard specifications. Slabs may be left exposed for acoustical correction. See pages 25 and 26 for Absorbex Acoustical Corrective.

THERMAX INSULATION OVER ROOF DECKS

Specifications

Use Over Wood, Concrete and Steel and Similar Roof Decks

Note: *For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see page 14.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.*

(1) WORK INCLUDED

Note: *Here list and locate definitely the roof areas to be covered. If more than one thickness is used, list separately and the respective locations or areas covered.*

(2) MATERIAL

Roof insulation shall be Thermax as made by Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa. Insulation shall be **(1 in.)** **(2 in.)** **(3 in.)** thick boards, 20 in. wide x 48 or 64 in. long.

(3) APPLICATION—GENERAL

(3a) CONDITION OF DECK—Deck shall be smooth, dry and swept clean.

(3b) GENERAL—Thermax shall be dry when applied. Lay only as much insulation as can be covered and protected by the finished roof covering in a single day. Where work is stopped, protect the edges of insulation with overlapping mopped strips of roofing felt, leaving the felt strips as a permanent seal. Apply Thermax units with edges in moderate contact. Cut units to fit snugly against all parapets or similar vertical surfaces. Do not force Thermax into place. Break joints between alternate rows.

Seal off at least each 30x30 ft. area (900 sq. ft.) with overlapping mopped strips of roofing felt on all edges.

Grout all joints with Portland cement mortar (1:3 mix) and brush a skim coat of thick consistency over the entire surface before applying built-up roofing.

(3c) APPLICATION OVER WOOD DECKS—

(3c1) Felt—Apply **(one)** **(two)** layer (s) of dry, saturated roofing felt over the roof boards. Lap the felt at least 1½ in. at joints. **(Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.)**

Note: *Felt protects against dripping of pitch or asphalt through deck. Include last bracketed italicized clause only where there is excessive humidity inside the structure. Depending on humidity conditions use one or two layers.*

(3c2) Laying—Apply the Thermax units over the felt in a single layer of the thickness specified.

(3c3) Nailing—Insulation shall be secured to deck with common (cement coated) nails with 1 in. galvanized roofing washers or large headed foundry nails sufficiently long to penetrate through the insulation and provide firm hold in deck. Space nails approximately 12 in. on centers and not more than 2 in. from edges of the unit. Carry one row of nails longitudinally through the center of each unit.

(3d) APPLICATION OVER CONCRETE DECKS—

(3d1) Felt—Apply **(one)** **(two)** layer (s) of saturated roofing felt over the roof deck, thoroughly stuck in hot **(pitch)** **(asphalt)**. Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.

Note: *Include clause (3d1) where interior of structure is subject to high humidity conditions as in paper, textile mills, etc., or on applications made during winter months where decks do not have opportunity to thoroughly cure and dry out before insulation is applied.*

(3d2) Laying—Mop deck thoroughly with **(hot pitch)** **(hot asphalt)** using not less than 35 lbs. per square. Apply the Thermax units while the mopping is still hot. Firmly bed a single layer of Thermax, of the thickness specified, in the binder over the entire surface.

(3e) APPLICATION OVER STEEL DECKS—

(3e1) Laying—Mop deck thoroughly with hot asphalt using not less than 35 lbs. per square.

Note: *Pitch should not be used over steel decks.*

Apply the Thermax units while the mopping is still hot. Firmly bed a single layer of Thermax, of the thickness specified, in the binder over the entire surface.

FOX THEATRE, SPOKANE, WASH.
Architects—Whitehouse and Price
Thermax Roof Insulation over Concrete Deck

(4) FINISHED ROOFING

Finished roofing shall be applied over insulation in accordance with the roofing manufacturer's specification.

THERMAX PARTITION AND FURRING BLOCKS

Specifications

Use for Fireproof Construction Including Column Covering

Note: For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see page 18.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

All partitions **(and)** **(all furring for exterior masonry walls)** **(and)** **(all column covering)** shall be built of Thermax.

Note: If there are any exceptions, so note. List and locate any special requirements if not clearly indicated on plans and details.

Note: Thermax partitions, etc., requiring no plaster may be finished with plastic or other high grade paint. Thermax has excellent acoustical absorption qualities and is pleasing in appearance when the blocks are symmetrically disposed and carefully laid. The surface is not fragile. If required, list separately here.

(2) PRELIMINARY PROVISIONS

(2a) All rough bucks for openings will be provided and accurately set by others.

(2b) All wood nailing blocks to receive grounds, etc., will be provided and attached to Thermax blocks by others.

(3) MATERIALS

(3a) GENERAL—All Thermax Blocks shall be as manufactured by the Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa.

(3b) PARTITION BLOCKS—Thermax, 2 or 3 in. thicknesses, as indicated on plans, 20 in. wide x 32, 48 or 64 in. long.

Note: Use 2 or 3 in. for partitions up to 10 ft. in height. Use 3 in. Thermax for partitions over 10 ft. in height.

(3c) FURRING BLOCK—Thermax **(2 in.)** **(3 in.)** thick, 20 in. wide x 32, 48 or 64 in. long.

(3d) COLUMN COVERING—Thermax **(2 in.)** **(3 in.)** thick, 20 in. wide x 32, 48 or 64 in. long.

(3e) MORTAR—Portland cement, gypsum or lime mortar fulfilling requirements of the standard A. S. T. M. Specifications. Sand shall be clean and free from organic matter with grains graded from fine to coarse. Mortar shall be mixed in the proportion of one (1) part of cement to three (3) parts of sand.

(3f) EMULSIFIED ASPHALT—Emulsified asphalt for setting exterior masonry wall furring shall be of high grade in which clay is used as the emulsifying agent and containing not less than 60% of asphalt **(specify)**.

(4) ERECTION

(4a) GENERAL—All blocks **(except furring set with asphalt)** shall be laid in Portland cement, gypsum or lime mortar with full, flush joints to a line, with horizontal beds uniformly level on each course. All joints, chinks and crevices between the tile and other work shall be filled with mortar well slushed in. Joints in alternate courses shall be broken.

All blocks shall be started on the fireproof floor, set plumb straight and true, and wedged at ceiling and slushed with mortar. Tile at corners and re-entrant angles shall be laid interlocked in alternate courses. Cut blocks into 16 in. lengths where end nailing blocks for grounds are necessary.

All joints of unplastered blocks shall be neatly pointed smooth as the work progresses.

(4b) PARTITIONS—All partitions coming in contact with existing walls shall be rigidly anchored **(by driving 10d spikes into the mortar joints of the wall at the joints of each partition tile course)** **(by building in at each partition tile course metal ties provided and built into the masonry by others)** **(specify)**.

(4c) FURRING—Furring shall be laid **(against)** **(or)** **(free from)** the walls as shown on the plans and details.

(4c1) Apply a heavy coat of emulsified asphalt approximately ⅛ in. thick **(sprayed)** **(troweled)** on to the thoroughly cleaned masonry wall. Apply the Thermax blocks while asphalt is plastic **(without mortar joints)** against this backing with sufficient pressure to assure a thorough bond. Units shall be set in moderate contact with exposed faces in a true vertical plane. Do not force Thermax into place.

Note: This method is advocated since it not only firmly bonds the Thermax to the masonry, but also seals the masonry against air infiltration or moisture due to capillarity.

(4c2) Rigidly anchor the free standing furring tile to the masonry wall approximately every square yard of face area **(by 10d spikes driven into the mortar joints of the wall at the course joints of the furring tile)** **(by building in at the furring tile course metal ties provided and built into the masonry by others)** **(specify)**.

Note: Use for free standing furring. Dampproofing of wall back of furring is advocated.

Note: See also par. 4, page 11, under "Thermax as Interior Plaster Base."

(4d) COLUMN COVERING—A single thickness of block shall be laid against the outside edges of the steel **(and the space between the tile and steel shall be solidly backfilled with pieces of Thermax blocks and mortar)**.

Note: Include or omit clause covering backfilling as required by local ordinance.

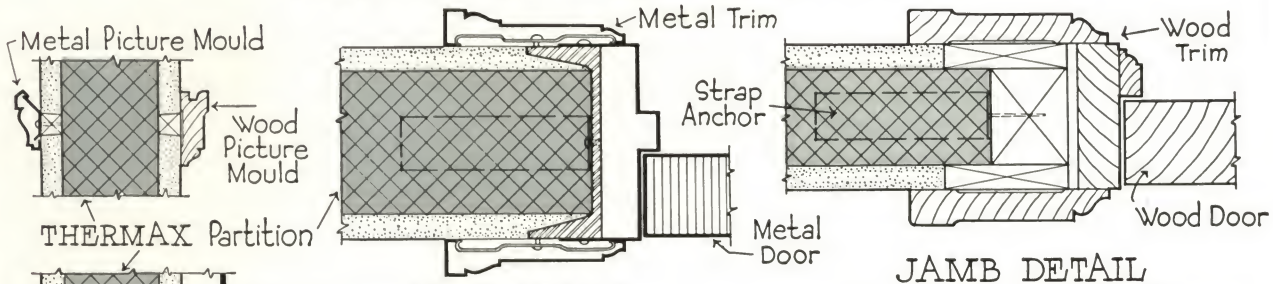
(4e) BUCK ANCHORS—Anchor all wood bucks to block by 10d cut nails driven into the buck at each block course or with other approved metal anchor.

(4f) LINTELS—Lintels shall have at least 4 in. bearing at each end on the block beneath. Lintels over openings more than 4 ft. 8 in. wide shall be provided with steel lintel furnished by others.

Cover all end joints of lintels with expanded metal lath strips 8 in. wide, tacked to blocks with large head nails or staples.

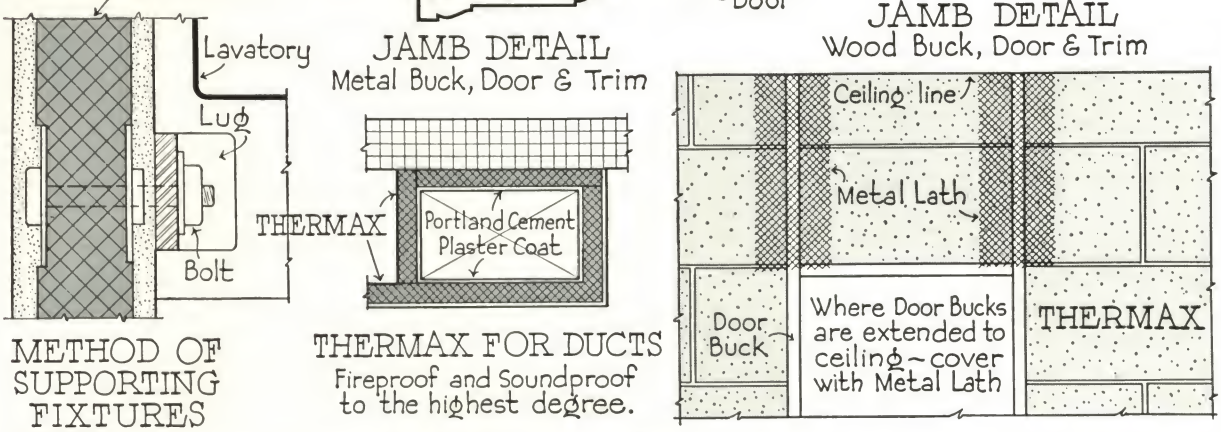
THERMAX PARTITION AND FURRING BLOCKS

Fireproof—Light Weight—Sound Insulating



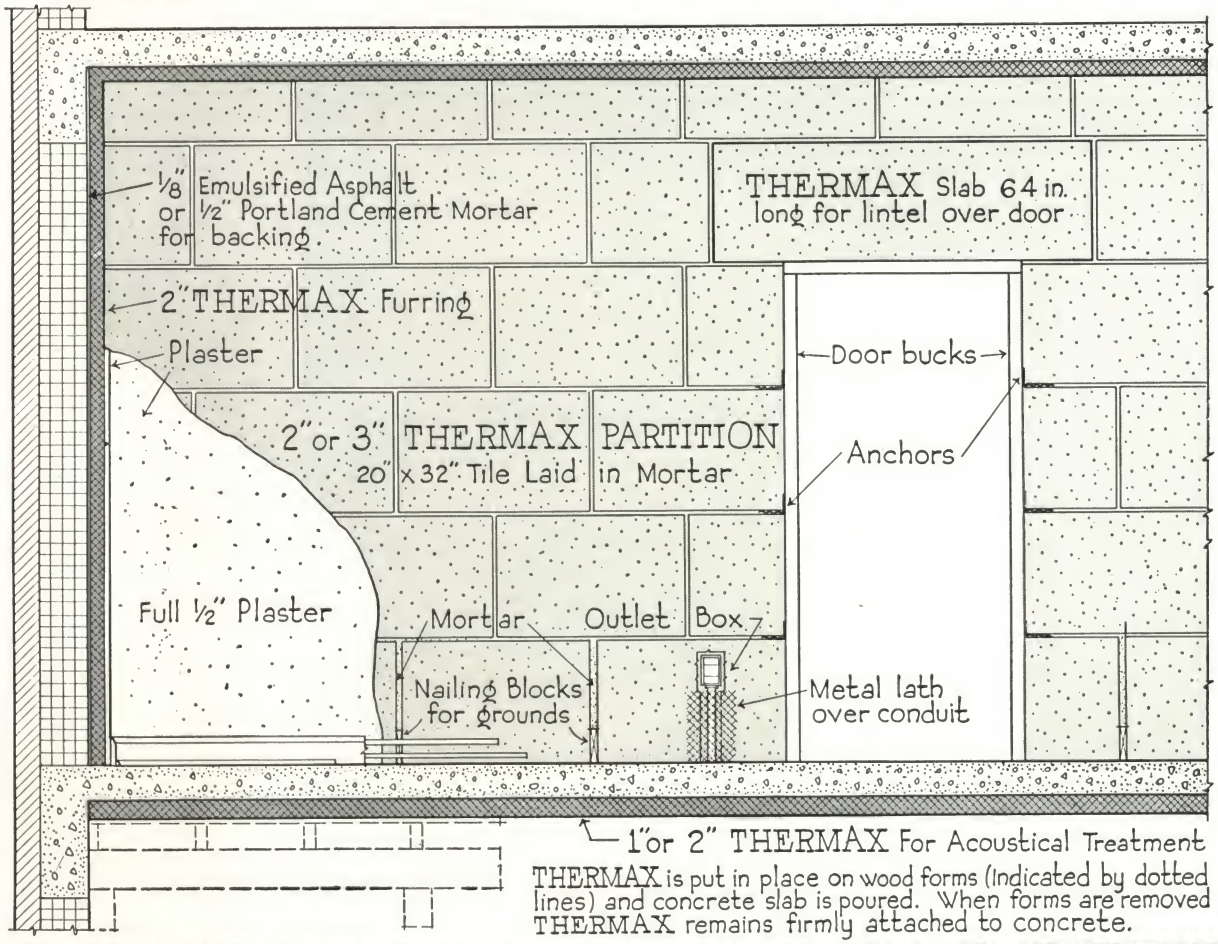
JAMB DETAIL
Metal Buck, Door & Trim

JAMB DETAIL
Wood Buck, Door & Trim



METHOD OF SUPPORTING FIXTURES

THERMAX FOR DUCTS
Fireproof and Soundproof to the highest degree.



THERMAX is put in place on wood forms (indicated by dotted lines) and concrete slab is poured. When forms are removed THERMAX remains firmly attached to concrete.

THERMAX HOLLOW PARTITION CONSTRUCTION

Specifications

Use for Fireproof Construction

Note: For Heat Transmission Coefficients as applied to various constructions, see pages 7 and 8. For details, see page 20.

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold faced type are selective.

(1) WORK INCLUDED

All partitions so indicated on the plans and details shall be built of Thermax Hollow Construction.

Note: If there are any exceptions, so note. List and locate any special requirements if not clearly indicated on plans and details.

(2) PRELIMINARY AND SUPPLEMENTARY PROVISIONS

(**2a**) All rough bucks for openings will be provided and accurately set by others.

(**2b**) All wood nailing strips will be provided and accurately set by others. They shall be sized to the clear interior space detailed and rigidly secured to the floors, ceilings, and walls in a manner best adapted to the particular construction.

Note: On wood construction strips may be nailed to the rough flooring or framing member—cement coated nails preferred. On concrete construction sleeper clips cast in the concrete are preferable to cement nails. Rawl plugs are excellent for attaching strips to masonry walls. See also Note under (3b).

(**2c**) Plaster grounds for full ½ in. plaster shall be provided and attached by others. Grounds shall be nailed to Thermax with nails driven at an angle.

Note: For plastering, see (5c) page 11, under heading "Thermax As Interior Plaster Base."

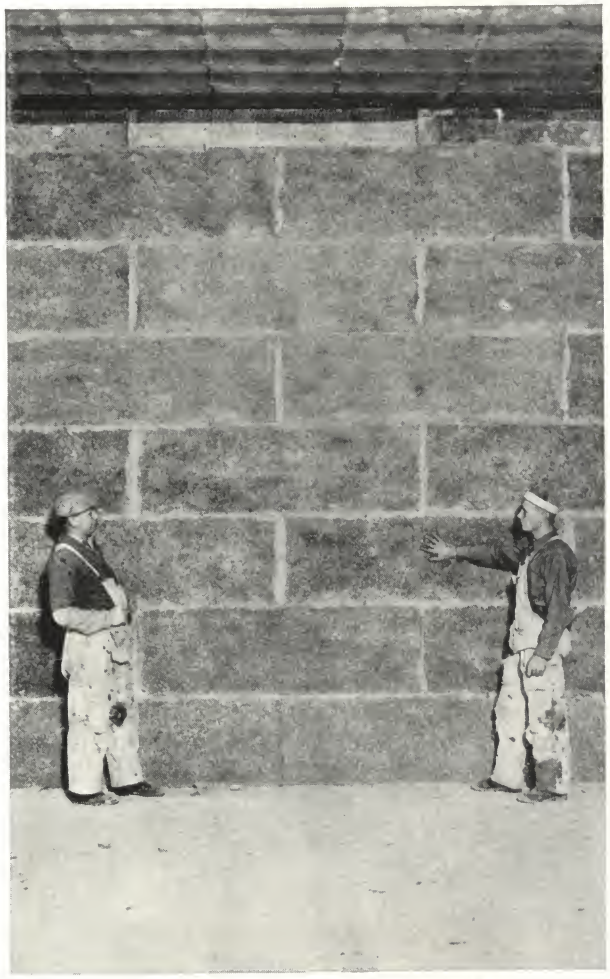
(3) MATERIALS

(**3a**) **THERMAX**—1 in. thick, 20 in. wide x 64 in. Thermax as manufactured by the Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa.

(**3b**) **SPREADER CLIPS**—Spreader clips shall be made of not less than 16 gauge (**galvanized**) (**specify rustproofing**) steel ¾ in. wide formed as detailed to support and seat the Thermax slabs and separate them to the required distance. Halves of clips shall be accurately spot welded together.

Note: Where desired half clips may be spot welded to cold rolled channels and these secured to floors, walls, door bucks, and ceilings in lieu of wood nailing strips. Clips shall be accurately spaced to rigidly support the Thermax slabs in the same general manner as detailed. If required, so specify and detail.

(**3c**) **MORTAR**—Portland cement mortar (gauged with hydrated lime) fulfilling requirements of the standard A. S. T. M. Specifications. Sand shall be clean and sharp, free from organic matter with grains graded from fine to coarse. Mortar shall be mixed in the proportion of one (1) part of lime putty to three (3) parts of sand.



NINTH STREET SCHOOL, LOS ANGELES
Thermax Fireproof Partitions—12′ 6″ High

(4) ERECTION

(**4a**) All blocks shall be laid in cement mortar (gauged with lime) with full, flush joints with horizontal beds uniformly level on each course. All joints, chinks, and crevices between the slabs and other work shall be filled with mortar well slushed in. Joints in alternate courses shall be broken.

(**4b**) All slabs in alternate courses shall break vertical joints with those below.

(**4c**) Starting at the floor, bed the first course of slabs in mortar and nail them to nailing strips at floors, walls, and opening bucks. Nails shall be 8d common (**cement coated**) nails with 1 in. galvanized roofing washers or 8d large headed foundry nails. Place the spreader clips at top, four (4) to the slab, one at each end close to the end joint and two at the center so spaced as to secure the ends of the next laid course.

(**4d**) Subsequent courses shall be laid in similar manner.

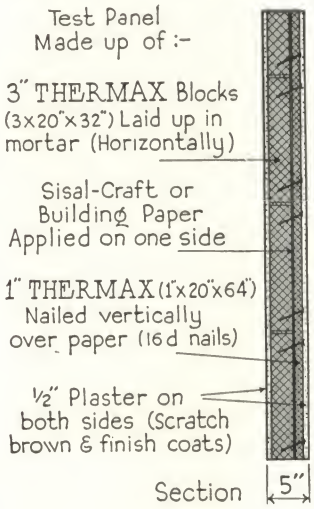
(**4e**) Accurately fit Thermax Slabs at ceilings, openings, etc. and around conduits, outlet boxes, etc. Nail top of ceiling slabs to ceiling nailing strip.

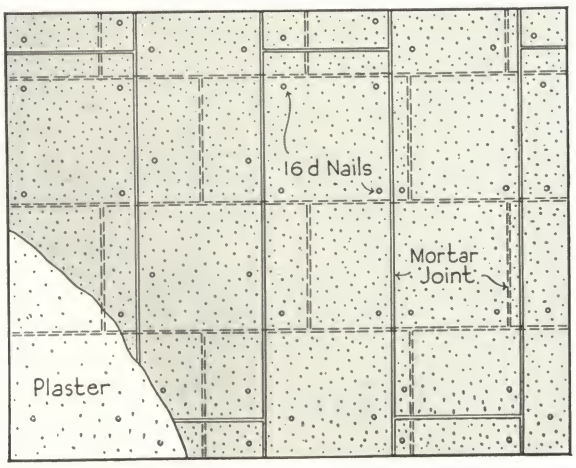
THERMAX SOUND PROOF PARTITIONS

5″ OVERALL THICKNESS

Sound Transmission Test, Bureau of Standards, July 19, 1934

SOUND TRANSMISSION LOSS IN DECIBELS 47.4



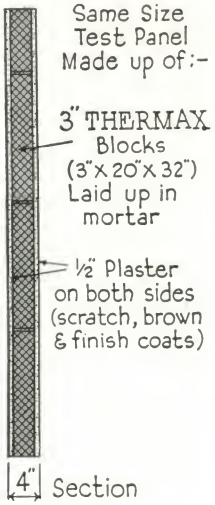


Elevation

4″ OVERALL THICKNESS

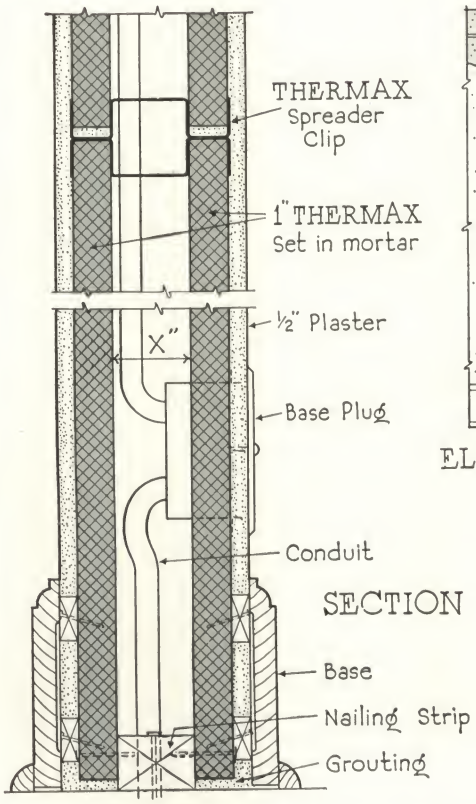
Bureau of Standards Test, June 7, 1934

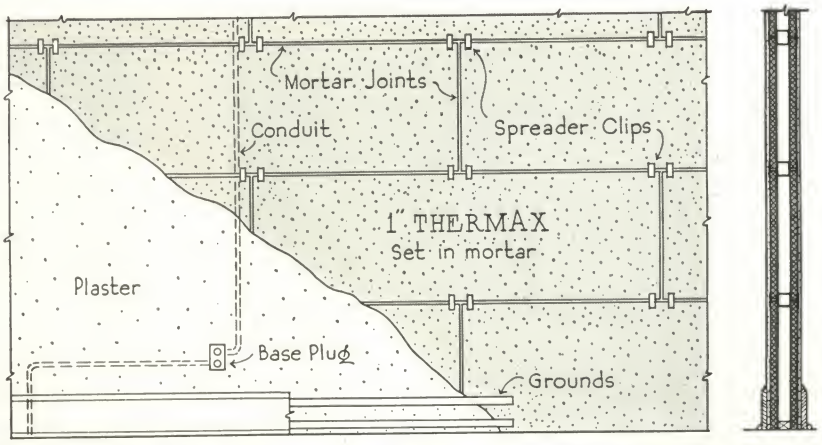
LOSS IN DECIBELS 35.0



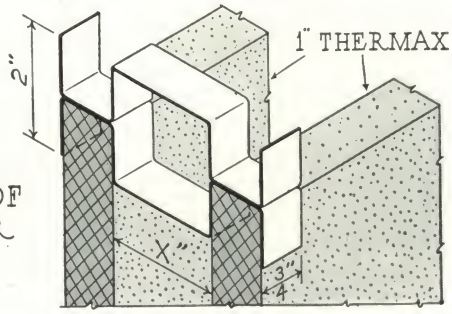
THERMAX HOLLOW PARTITION CONSTRUCTION

Earthquake Proof





ELEVATION OF PARTITION SHOWING LOCATION OF CLIPS



DETAIL OF SPREADER CLIP

2 INCH THICK STEEL STUD AND THERMAX PARTITION

Specifications

Use for Fireproof Construction

Note: *For Heat Transmission Coefficients as applied to Various Constructions, see pages 7 and 8. For details, see page 22.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those causes which apply to the particular work. Words or clauses within brackets in bold faced type are selective.*

(1) WORK INCLUDED

All partitions **(so indicated)** shall be 2 in. thick (finish) metal stud and Thermax construction.

(2) PRELIMINARY PROVISIONS

All rough bucks for openings and ½ in. thick plaster grounds will be provided and set by others.

(3) MATERIALS

(3a) THERMAX—1 in. thick, 20 in. wide x 64 in. Thermax as manufactured by the Thermax Division, Northwest Magnesite Co., Farmers Bank Building, Pittsburgh, Pa.

(3b) STEEL STUDS—Standard 1 in. steel channels, preferably hot rolled, weighing not less than 700 lbs. per M lin. ft.

(3c) CLIPS—Clips for attaching Thermax to steel studs shall be Thermax Clips of 14 ga. spring steel wire.

(4) ERECTION

(4a) Drill holes aligned in a vertical plane in floor and ceiling at least ¾ in. deep, 20½ in. o. c. Cut studs slightly long and spring into the holes.

(4b) Securely anchor a 1 in. channel runner at floor and ceiling with lag screws or toggle bolts. Align channel runners in a vertical plane. Bend 4 in. shoe on top and bottom of each vertical stud. Erect studs 20½ in. o. c. and securely wire studs to runners.

(4c) Securely anchor 1 in. channel runners at floor and ceiling with lag screws or toggle bolts. Align channel runners in a vertical plane. Studs shall be cut to length, spaced 20½ in. o. c., and spliced by bending separate shoes of a narrower channel or bar and wiring these to studs and runners.

Note: *(4a), (4b), (4c) above are optional methods.*

(4d) The first stud shall be erected against a structural wall and substantially secured. Attach to this stud Thermax Clips spaced approximately 12 in. apart o. c., loops outward.

(4e) In the first panel set in 1 in. thick Thermax Slabs, end to end from floor to ceiling inserting the edge next the wall stud in the clip loops. Secure the edges of slabs next to the second stud with Thermax Clips with loops outward. Erect subsequent Thermax panels in similar manner.

(4f) Place a stud at all opening bucks extending from floor to ceiling and secure to buck.

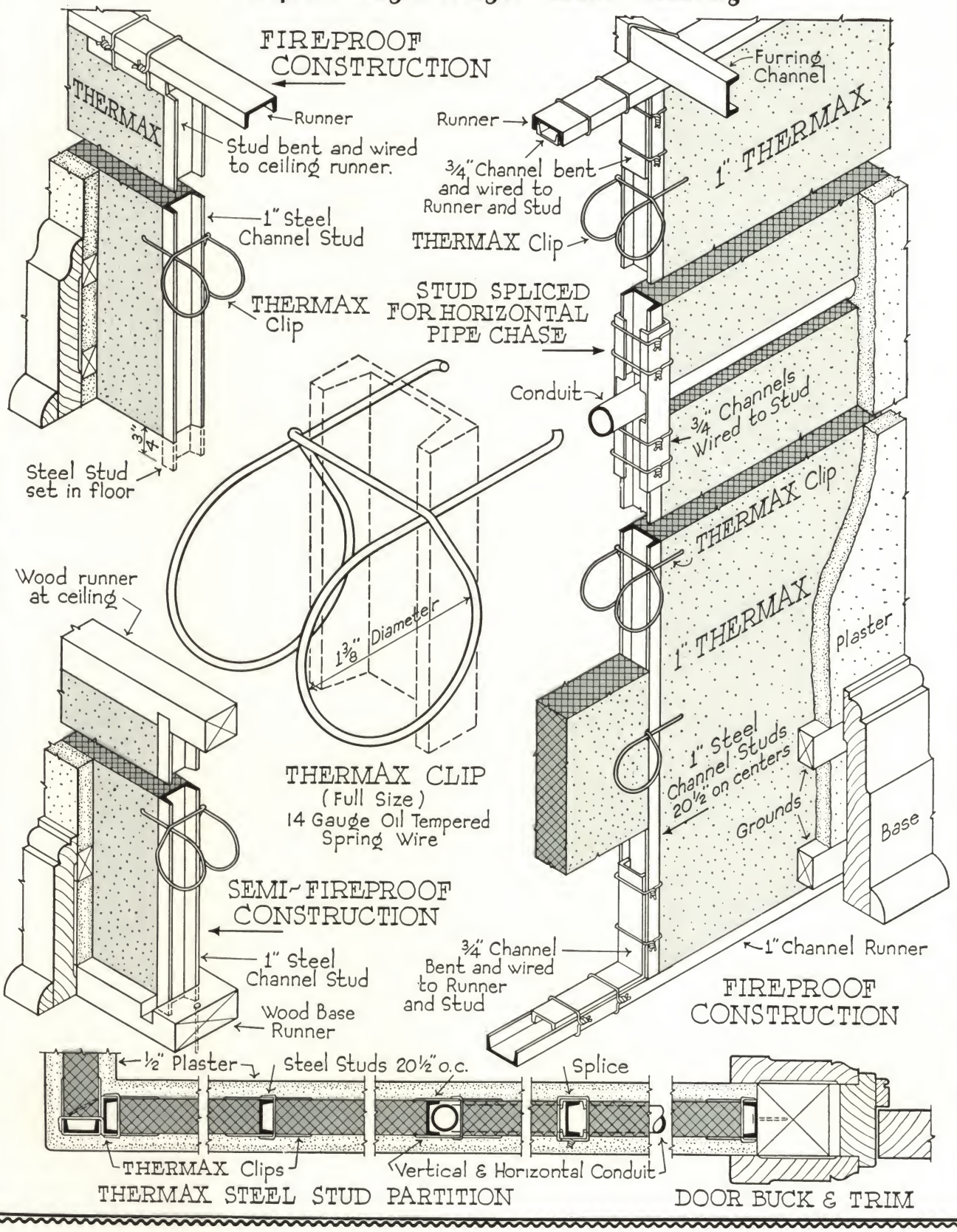
(4g) Accurately fit Thermax Slabs at ceilings, openings, etc., and around conduits, outlet boxes, etc. Where necessary, form pipe and conduit space with studs. Cover all pipe spaces, conduits, etc., with metal lath strips tacked to Thermax.

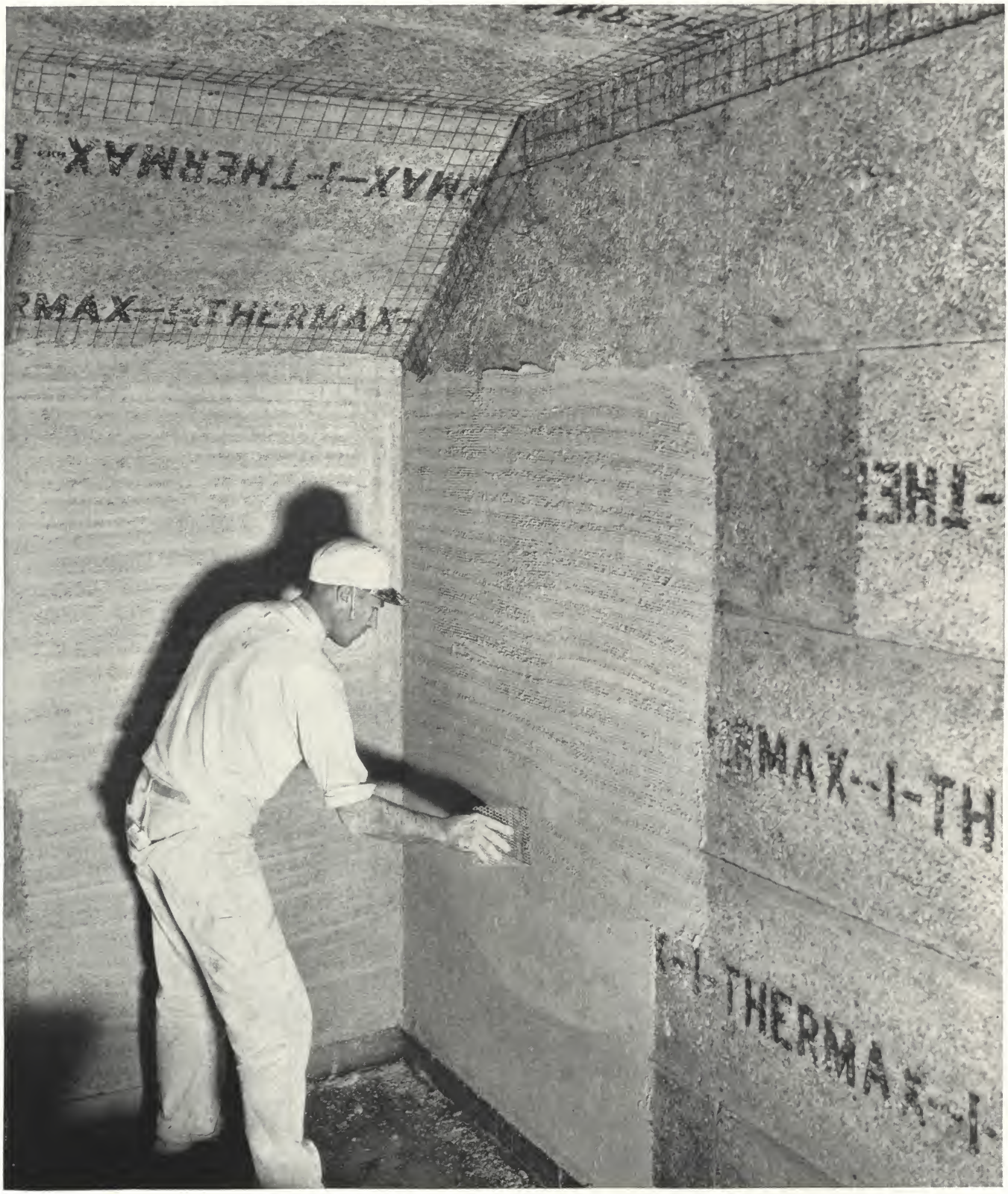
2 In. Thick Steel Stud and Thermax Partition Ready for Plaster—Rapidly Erected and Economical in Cost

2 In. Thick Thermax Plank Partitions 9 and 8 Ft. High—No Studs Required—Note Provision for Conduit

THERMAX STEEL STUD PARTITIONS

Fireproof—Light Weight—Sound Insulating





One-inch Thermax Fireproofing Insulation Used for Plaster Base
20 Houses—Bonneville Dam, Bonneville, Oregon; Hollis Johnston, Architect, Portland, Oregon

Two-inch Thermax Suspended Ceiling Construction for Plaster Base, Insulation, and Sound-proofing
French Hospital, New York City—Crow, Lewis and Wick, Architect; C. F. Neergaard, Consultant

Thermax Suspended Ceiling to Which Is Cemented Absorbex Type "A" for Acoustical Treatment
Jackson County Court House, Kansas City, Mo.—Keene and Simpson, Architects

ABSORBEX ACOUSTICAL CORRECTIVE

Incombustible—Moistureproof—Permanent

• **DESCRIPTION**—Absorbex (Thermax) is a cement-timber product, made by a process which shreds timber into long tough fibers, then passes them through a binding emulsion of high temperature cement. The entire mass is then formed between rolls and steel belts at a temperature of 500 degrees F. into incombustible slabs, uniform in thickness, containing millions of minute air cells, affording high insulation, great structural strength, fireproofness, and superior acoustical value.

• **TYPES OF ABSORBEX**—There are three types of Absorbex—Types "A," "B," and "C"—depending upon the fineness of the fibers and their treatment. All types of Absorbex are strong and are not easily fractured; they are inert to temperature and humidity changes, can be repainted many times with lead and oil paint without loss of efficiency, have high light reflection and are incombustible.

Type "A"—Type "A" Absorbex is furnished in tile form 9x9, 9x18, and 18x18 in. or multiples thereof, beveled or unbeveled. It may be cemented to concrete, plaster, or Thermax backing, or placed on furring strips. Its sound absorption coefficient ranges from .51 at 512 frequency to .98, depending upon the method of application necessary to meet the acoustical requirements of the individual job. Its natural light buff color will blend with any decorative scheme, or it may be painted any color desired, without loss of efficiency.

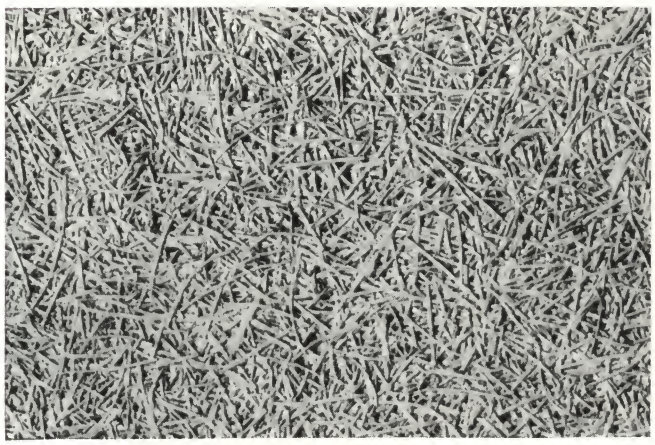
Type "B"—Type "B" Absorbex is similar to Type "A" in appearance, but the texture is not as uniform and the porosity is slightly greater than that of Type "A." It has an absorption range of .48 at 512 cemented direct to plastered surface, or .72 if applied on furring strips, with a resultant noise reduction coefficient of .65.

Type "C"—Type "C" Absorbex, because of its excellent absorption efficiency, incombustibility, and economy, is ideal for use in high ceiling construction, such as gymnasiums, armories, auditoriums, etc. It is applied in board or slab form (no bevel) and may be satisfactorily placed in concrete forms without mechanical ties.

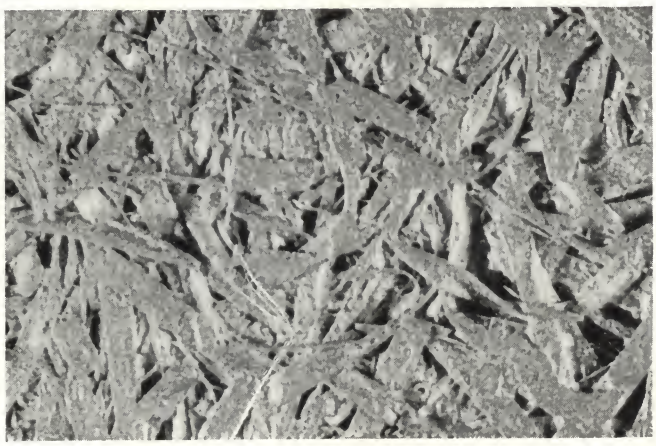
• **SOUND ABSORPTION AND METHOD OF INSTALLATION**—Since the method of erection or application of Absorbex has a direct bearing on the absorption values obtained, these various materials, method of erection, and the absorption coefficients obtained thereby are shown in details on the opposite page. All tests and ratings are by the Official Laboratories of the Acoustical Materials Association.

• **FLAME TEST**—Standard flame tests as required by the Departments of Buildings, New York City for determining the fire resisting qualities of acoustical materials were conducted by Columbia University on Thermax. This test consisted of the application of a semi-luminous flame from an air-gas burner with ¾-in. nozzle to the exposed surface. Temperature was gradually increased to 1700 degrees F. for one-half hour and maintained at this temperature for an additional ten-minute period. Temperatures were recorded by Thermo-couples. The material did not flame or give off smoke or noxious fumes—thus rating the material incombustible, permitting its unlimited use in fireproof construction.

• **SALES AND SERVICE**—Absorbex is brought to you through carefully selected contractors who are skilled in its application and have thorough knowledge of the engineering principles as applied to architectural acoustics and sound isolation.



TYPE "A" ABSORBEX—FULL SIZE



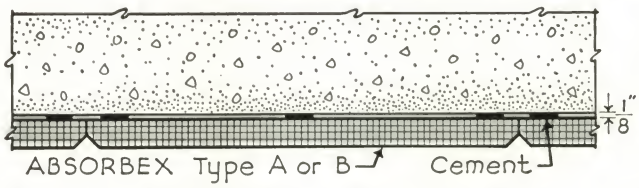
TYPE "C" ABSORBEX—FULL SIZE

SOUND ABSORPTION COEFFICIENTS

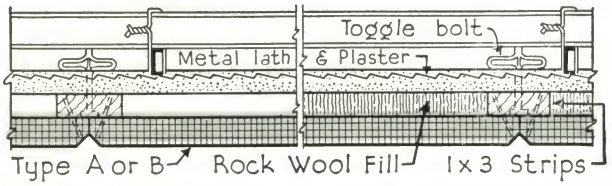
The absorption coefficients of Absorbex as given in the table below are the results obtained in the Unified Tests conducted by the Official Laboratories of The Acoustical Materials Association.

Detail No.	Description Exposed Surface Painted with Oil Paint	Thick-ness	Coefficients					
			128	256	512	1024	2048	Reduction
1	Absorbex, Type A, Painted 2 Coats	1-in.	.07	.22	.51	.91	.77	.60
2	Absorbex, Type A, Painted 2 Coats	1-in.	.21	.38	.71	.94	.80	.70
3	Absorbex, Type A (1-in.) Spot Cemented to Type C (1-in.), Painted 2 Coats	2-in.	.32	.50	.95	.96	.80	.80
3	Same as above, Painted 8 Coats	2-in.	.29	.54	.95	.96	.78	.80
2a	Absorbex, Type A, Space Between Strips Rock Wool Filled, Painted 2 Coats	2-in.	.58	.77	.98	.92	.79	.85
1	Absorbex, Type B, Painted 2 Coats	1-in.	.20	.25	.48	.83	.79	.60
2	Absorbex, Type B, Painted 2 Coats	1-in.	.25	.32	.72	.87	.78	.65
4	Absorbex, Type C, Painted 2 Coats	1-in.	.11	.17	.49	.68	.63	.50
4a	Absorbex, Type C, Space Between Strips Rock Wood Filled, Painted 2 Coats	2-in.	.45	.69	.81	.64	.64	.70
5	Absorbex, Type C, Painted 2 Coats	2-in.	.21	.44	.85	.70	.72	.70

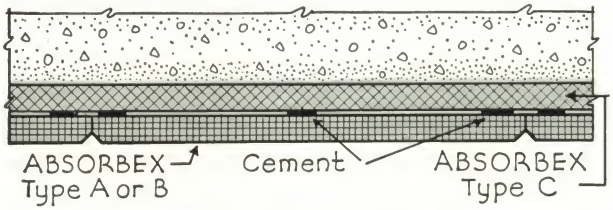
ABSORBEX INSTALLATION DETAILS



No. 1 ABSORBEX Type A or B 1" Beveled Tile, painted two coats, spot cemented to the plaster or cement ceiling.

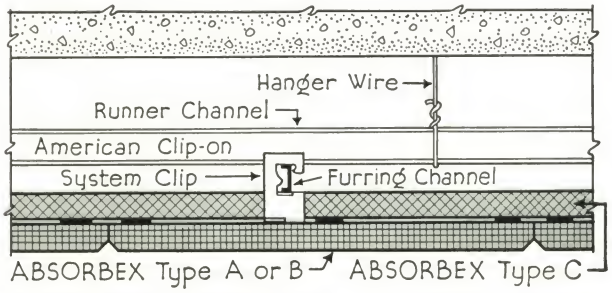


No. 2 ABSORBEX Type A or B 1" Beveled Tile painted two coats, nailed to 1x3 furring strips Furring strips toggle bolted to ceiling.

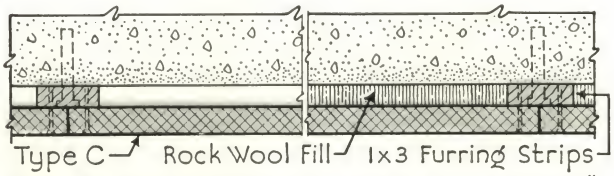


No. 3 ABSORBEX Type A or B 1" Beveled Tile, painted two coats and spot cemented to ABSORBEX Type C (1"x 20"x 64")

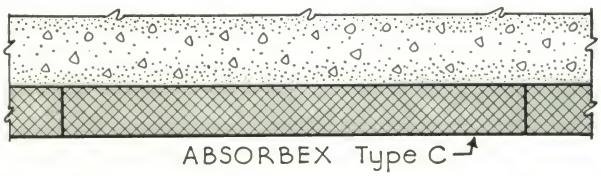
Note: The type C material may be either laid in the forms at the time the concrete is poured or securely attached afterwards directly to the concrete slab with expansion bolts or dryvins.



SUSPENDED CEILING CONSTRUCTION ABSORBEX Type A or B, 1" Beveled Tile painted two coats, spot cemented to suspended ABSORBEX Type C (1"x 20"x 64")



No. 4 ABSORBEX Type C (1"x 20"x 64") unbeveled, painted two coats, nailed to 1x3 furring strips, toggle or bolted to ceiling.



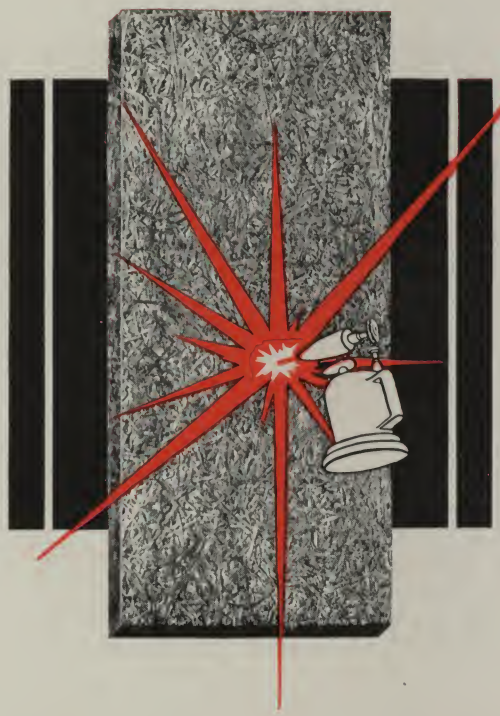
No. 5 ABSORBEX Type C (2"x 20"x 64") unbeveled, laid in concrete forms, painted two coats after forms are removed.

THERMAX

The FIREPROOFING INSULATION

ABSORBEX

ACOUSTICAL CORRECTIVE



SPECIFICATIONS AND TECHNICAL DATA

1936 *Edition*

THE RED BOOK

1936 EDITION

THERMAL INSULATION
SOUND CONTROL

UNITED STATES GYPSUM COMPANY

UNITED STATES GYPSUM COMPANY

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THERMAL INSULATION

General Commodities Division

SOUND CONTROL SERVICE

Engineering Sales Division

• • •

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300 West Adams St., CHICAGO, ILL.

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Cincinnati, Ohio.....506 Builders' Building
Cleveland, Ohio.....817 Hanna Building
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Samson Plaster Board Company, Sales Agents for United States Gypsum Company, Crosby Building, Buffalo, N. Y.

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(3) Rocklath, Metal Lath and Accessories; Steel-H Studs; USG Resilient and Standard X Plastering Systems; Gypsum Plasters and Finishing Lime: Sheetrock, The Fireproof Wallboard.

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Thermal Insulation

General Commodities Division

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WEATHERWOOD* INSULATION

Structural Board Type

PHYSICAL CHARACTERISTICS

DESCRIPTION—Weatherwood Insulating Board (Also Red Top* Insulation and Red Top Weatherwood Insulation) is a felted wood fiber product treated to make it highly moisture resistant. It is so formed that it produces a homogeneous board, free from laminations and tendencies to split through the center.

NOTE—*United States Gypsum Company has three Insulation Board manufacturing mills: St. Joseph, Missouri; Greenville, Mississippi; and Lisbon Falls, Maine. While the raw materials from which the St. Joseph Mill insulation is made are basically different from those of the Greenville and Lisbon Falls Mills, the physical characteristics of the products of all three mills are essentially the same.*

LOW THERMAL CONDUCTIVITY—The average thermal conductivity established in tests is .33 B.t.u.'s per hour, per sq. ft., per one inch thickness, per degree F.

RESISTANCE to MOISTURE—NON-ABSORPTION—Tests show that this board, after being submerged in water for a period of two (2) hours, has an average water absorption of less than 15 per cent. It absorbs less paint than any similar product.

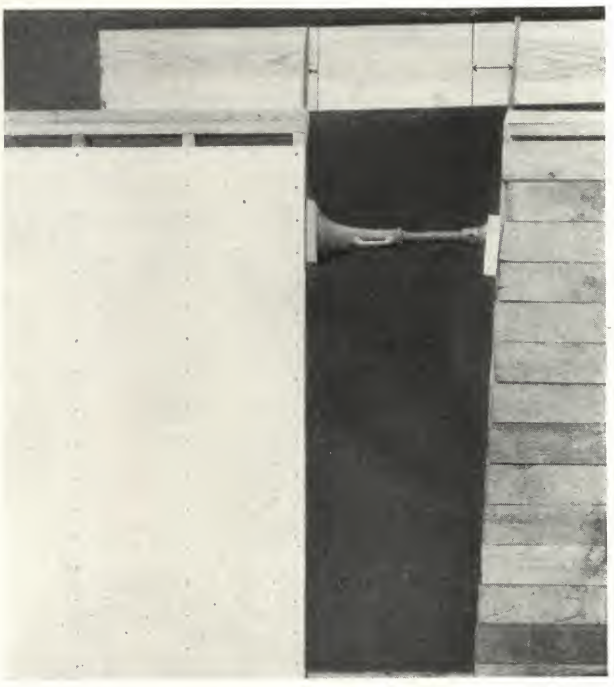
STRUCTURAL STRENGTH—The tensile strength is over 350 lbs. per sq. in., and the modulus of rupture, over 500 lbs.

DURABILITY—There is nothing in this board that will deteriorate prematurely and impair the original insulation value. Since the board is homogeneous, the fibers being interwoven through the sheet, it will not split. The weatherproofing chemical with which the fibers are treated makes the board distinctly distasteful to rodent and insects. Weatherwood Insulation Board is also furnished, when specified, with special treatment making it proof against attack by termites and fungi growth (dry rot). This treatment does not change its natural ivory color or other physical characteristics.

NON-COMPRESSIBILITY RESILIENCE—When laid over roof decks under standard roofing materials, it is sufficiently firm to prevent denting or cutting of the roofing under normal use. Weatherwood will not compress under furring strips.

UNIFORMITY—Adequate laboratory control and mill inspection assure uniformity in density and structural strength.

APPEARANCE—TEXTURE and COLOR—The high quality of the product is reflected in its fine appearance. One surface is finished in a uniform semi-rough texture and the other in a smooth "skin" surface. One side, where so specified, may be obtained in either a sanded smooth or a brushed finish. The standard color is an attractive deep cream. All Weatherwood products, however, may be obtained in a choice of three colors—cream, gray and light brown.



COST—Advanced methods of manufacture, quantity production, and national distribution assure a reasonable cost. Because of the light weight and large units, the board is easy to install at low labor costs. It is cut and nailed like lumber.

*Trade-Mark

United States USG Gypsum Company

WEATHERWOOD PRODUCTS

BUILDING BOARD—Used as wallboard and sheathing, ½ in., ¾ in., and 1 in. thick; 4 ft. wide; and 4, 5, 6, 7, 8, 8½, 9, 9½, 10 and 12 ft. long.

INSULATING PANEL STRIPS—For covering joints of Weatherwood Building Board when used as a wallboard. ⅜ in. thick, 2 in. wide, and 9 ft. long; ⅜ in. thick, 4 in. wide, and 9 ft. long and ½ in. thick, 4 in. wide, and 9 ft. long—all with beveled edges.

MOULDINGS—In addition to the Insulating Panel Strips, eight (8) standard mouldings (see details) are carried in stock in 9 ft. lengths in three (3) colors—ivory, gray, and tan. Other special shapes are obtainable when required.

TONGUE-and-GROOVE INSULATING SHEATHING—Used as sheathing and roof boarding. Needs no headers, because applied crosswise to studding the same as lumber. The tongue-and-groove joint insures a heat-sealed joint that will not bulge. Fits standard window frames, ½, ¾ and 1 in. thick, 16 and 18 in. wide, and 4, 5, 6, 7, 8, 8½, 9, 9½, 10 and 12 ft. long with long edges tongue-and-grooved.

INSULATING LATH—Used as a base for gypsum sanded or wood fiber plaster. ½ in., ¾ in., and 1 in. thick; 18 in. wide; and 48 in. long. The 48-in. edges are tongue-and-grooved and beveled, preventing plaster from being forced between sheets to cause uneven walls and ceilings.

METAL REINFORCED INSULATING LATH—Used as a base for gypsum plaster where plaster cracks must be kept to a minimum. ½ in., ¾ in., and 1 in. thick; 18 in. wide, and 48 in. long with T and G and beveled joint on long edges and a wire fabric attached to one long edge so that the reinforcement can be slid into place over the joint after the lath is applied without further nailing. Where specified, it can be furnished with reinforcement on end edge as well as long edge.

ROOF INSULATION—Used over wood, concrete, steel, and gypsum roof decks. ½, 1, 1½, 2, 2½, 3, 3½, and 4 inches thick; waterproof glue or staple laminated. The area of the unit is 22 inches wide by 47 inches long.

INSULATING TILE BOARD—insulating Tile Board is made in two types—Standard Density fabricated from Standard Weatherwood Board and Low Density.

Standard Density—Is adapted to general use for decorative wall finishes. Made in three (3) thicknesses and two groups of standard sizes (areas) and in three (3) colors—standard ivory, gray, and tan, and in the three (3) surface finishes—smooth "skin," sanded smooth, and brushed.

Low Density—A special low density product used for sound correction where a low cost, attractive sound absorbent is required. Made in three (3) thicknesses and two groups of standard sizes (areas) and in two (2) surface finishes,—sanded and brushed. The standard color is ivory, but in the ½-inch thickness it is made also in gray and tan. The sound absorption at 512 Double Vibrations is:

½ inch thick	.40 D.V.
¾ inch thick	.50 D.V.
1 inch thick	.60 D.V.

Thicknesses—Both standard and low density tiles are made in three (3) thicknesses—½, ¾, and 1 inch.

Sizes (Group 1)—Tile board with the long edges tongue-and-grooved. Specially designed for nailing application to standard framing. 16 in. x 32 in.; 18 in. x 32 in.; 24 in. x 32 in.; 18 in. x 48 in.; 24 in. x 48 in.

Sizes (Group 2)—Tile board with square edges. (Obtainable with all four edges tongued-and-grooved when so specified.) 6 in. x 12 in.; 12 in. x 12 in.; 12 in. x 24 in.; 8 in. x 16 in.; 16 in. x 16 in.; 24 in. x 24 in.

INSULATING PLANK—Used for interior wall finish and for wainscoting and similar treatment to combine insulation and decoration in one material. Insulating Plank is made with shiplap longitudinal edges and is furnished in three (3) colors—ivory, gray, and tan in three (3) surface finishes—smooth "skin," sanded smooth, and brushed.

Planks are furnished in two (2) types—Individual Planks or Multiple Planks. Each type furnished beaded or plain bevel design (see details).

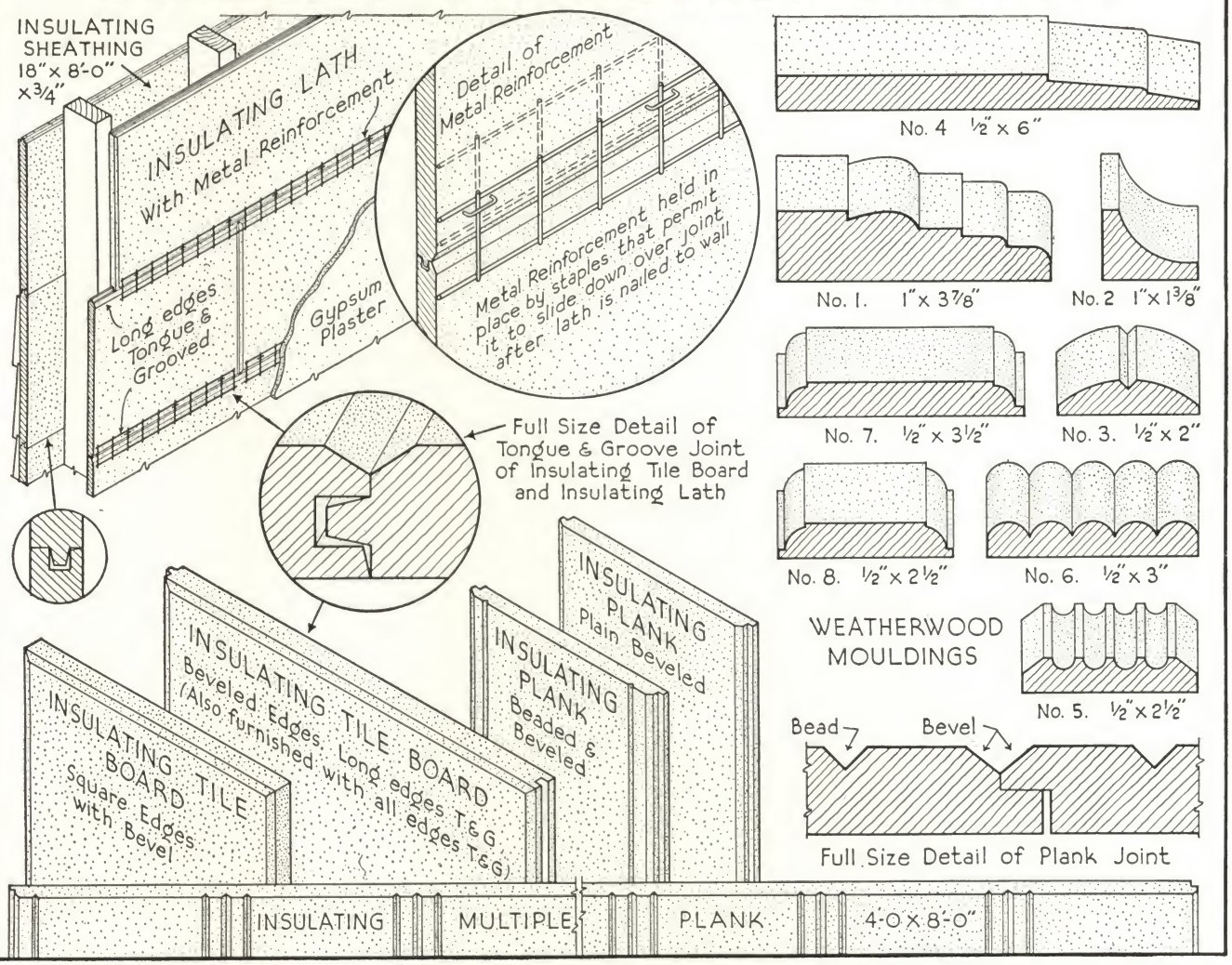
Individual Plank—½ inch thick, in widths 6, 8, 10, 12, and 16 inches by 6, 8, and 10 feet long.

Multiple Plank—½ inch thick, 4 ft. wide by 8 ft. long with beads or bevels spaced uniformly (equal plank widths) 6, 8, 12, or 16 inches on centers. Random spacing of beads or bevels can be furnished on special order not less than 6 inches apart.

NAIL-HYDE*—For filling nail holes, abrasions, and gouges in surface of Weatherwood Insulating Board products. Supplied in 2½-lb. packages, sufficient to treat about 1000 sq. ft. of board. Color when dry is same as board.

*Trade-Mark

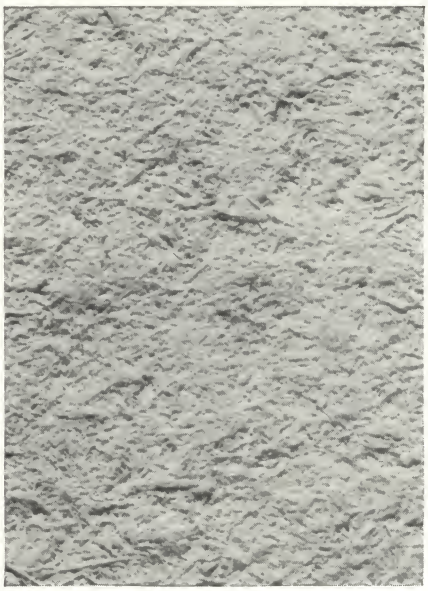
DETAILS OF WEATHERWOOD PRODUCTS



SURFACE FINISH of WEATHERWOOD • ACTUAL SIZE

SMOOTH SKIN

BRUSHED



SANDED SMOOTH

United States USG Gypsum Company

Master Specifications

WEATHERWOOD INSULATION as SHEATHING and ROOF BOARDING

NOTE—*On walls use under wood siding, shingles, stucco, or masonry veneer. On roofs use under shingles, slate, tile or similar rigid roof units which may be laid over wood furring strips.*

NOTE—*Notes are explanatory or advisory only and should not be used in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words in bracketed bold face type are selective.*

(1) CORRELATIVE PROVISIONS

NOTE—*Provide for the following in other specification divisions.*

NOTE—*Weatherwood Insulation is not a nailing base.*

(1a) CONSTRUCTION—Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association.

(1b) WOOD SIDING—All joints shall butt over the center of a stud.

(1c) FURRING STRIPS—Provide 1 x 2-in. furring strips properly spaced over Weatherwood Insulation to take shingles, slate, tile and similar wall and roof covering. Nails shall be sufficiently long to pass through the furring and the board and penetrate the framing member at least 1 in.

(1d) STUCCO BASE—Stucco must be reinforced with self-furring expanded metal exterior stucco lath secured to studs with nails sufficently long to pass through the board and penetrate the stud at least 1 in.

(1e) MASONRY VENEER TIES—Provide masonry ties at each stud spaced 16 in. apart vertically. Nails shall be sufficently long to pass through the board and penetrate the stud at least 1 in.

(1f) FRAME FURRING, ETC.—Provide in accordance with the details window and door frame furring strips to compensate for the thickness of Weatherwood Insulation.

NOTE—*We advocate wide outside blind stops in frame construction. If, however, these are omitted, provide that the inside of the outside casings be lined with beveled strips of Weatherwood Insulation.*

(2) WORK INCLUDED

NOTE—*Here list and locate definitely the wall and roof areas to be covered. If ½-in., ¾-in. and 1-in. thicknesses are to be used, list separately and the respective locations or areas covered.*

(3) MATERIAL

(3a) GENERAL—[Sheathing] [and] [roof boarding] shall be Weatherwood Insulation Board as made by the United States Gypsum Company, 300 West Adams Street, Chicago.

(3b) WALLBOARD SIZE—Boards shall be full **[½ in.] [and] [¾ in.] [and] [1 in.]** thick **[as above designated],** 4 ft. wide by 4, 5, 6, 7, 8, 8½, 9, 9½, 10, or 12 ft. long as best adapted.

(3c) TONGUE and GROOVE SHEATHING—Board shall be tongue and groove sheathing **[½ in.] [and] [¾ in.] [and] [1 in.]** thick, **[as above designated], [16 in.] [and] [18 in.]** x 4, 5, 6, 7, 8, 8½, 9, 9½, 10 or 12 ft. long as best adapted.

(4) APPLICATION

(3a) GENERAL—Continuity of insulation is imperative.

(4a1) Wallboard Sizes—Apply boards with the length parallel with the framing members. Where possible, boards shall be of sufficient length to completely span between sills and plates or other structural members. Where end joints are necessary, these shall only be made centered over 2 x 4 in. headers cut in between framing members. Side joints shall center over framing members. Space ¼ in. apart at all edges. Bring the boards in close contact with window and door frames and trim.

(4a2) Tongue and Groove Sheathing—Apply boards at right angles to framing members. Fit the tongue and groove joints snugly together. Leave a ¼ in. space at end joints. Stagger end joints in successive courses.

(4b) NAILS—Galvanized roofing nails.

(4b1) Use 1½ in. nails for ½ in. thickness.

(4b2) Use 2 in. nails for ¾ in. and 1 in. thickness.

(4c) NAILING—

4c1) Wallboard Sizes—At all edges space nails 3 in. apart on centers and ½ in. from the edge. On intermediate framing members, space nails 6 in. apart on centers. First nail the boards to intermediate studs and then nail the edges.

(4c2) Tongue and Groove Sheathing—Space nails 5½ in. apart, 4 nails to each support. Nail to intermediate studs first.

Master Specifications

WEATHERWOOD INSULATING LATH

NOTE—*Use as an insulating plaster base.*

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words in bracketed bold face type are selective.*

(1) CORRELATIVE PROVISIONS

NOTE—*Provide for the following in other specification divisions.*

(1a) CONSTRUCTION—Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association.

(1b) FURRING—Fur all exterior masonry walls to receive Weatherwood Lath with **[1 x 2-in.] [specify]** furring strips, accurately shimmed to a true, level plane, set 16 in. on centers. Substantially secured to the masonry.

(1c) GROUNDS—Furnish and erect, substantially secured to framing members through the Weatherwood Lath, full ⅜ in. grounds on exterior frame walls and full ½-in. grounds elsewhere.

NOTE—*Full ½-in. thickness of plaster should be used over Weatherwood Lath. Where stock window and door frames are used, they provide for ⅞-in. thichness for lath and plaster; therefore on exterior frame walls, which are usually of less area due to window and door openings, a ⅜-in thickness may be used. If special frames are detailed, provide for full ½-in. thickness of plaster over the lath.*

(1d) PLASTERING—

(1d1) Caution—Do not wet Weatherwood Lath before applying plaster.

(1d2) Cornerite—Apply metal lath "cornerite" strips over Weatherwood Lath at all re-entrant angles and all corners not protected with corner beads.

(1d3) Plaster—Use gypsum cement or gypsum wood fiber plasters.

(1d4) Thickness—Full ⅜ in. thick on exterior frame wall, elsewhere full ½ in. thick, flush with grounds.

(1d5 Application—Apply in three (3) coats in accordance with the plaster manufacturer's specification. Surfaces shall be rodded to a true plane. All corners and angles shall be plumb and true. Wherever necessary and particularly on ceilings, provide plaster screeds to insure an even and uniform plaster thickness.

NOTE—*The maintaining of a uniform and sufficient plaster thickness over a fibrous or board plaster base such as Weatherwood Lath, and especially on ceillings, cannot be too strongly stressed if permanent, satisfactory results are to be expected. Too frequently a weak, thin plaster coat, inadequate to withstand the usual strains of building settlement, shrinkage and vibration, results in plaster cracks which react against even the best of plaster bases.*

(1d6) Ventilation—Provide adequate ventilation for the proper drying of the plaster work.

NOTE—*Due to the moistureproof characteristics of Weather wood Lath, all moisture emanating from the plastering operation must be carried off by the air coming in contact with the exposed surface. Particular attention to proper ventilation is necessary.*

(2) WORK INCLUDED

NOTE—*Here list and locate definitely the wall and ceiling areas to be covered. If ½ in., ¾ in. and 1 inch thickness are used, list separately and the respective locations or areas covered.*

(3) MATERIAL

Plaster shall be Weatherwood **[Tongue and Groove and Beveled] [Metal Reinforced]** Insulating Lath as made by the United States Gypsum Company, 300 West Adams Street, Chicago. Units shall be full **[½ in.] [¾ in.] [1 in.]** thick **[as designated above],** 18 in. wide by 48 in. long.

(4) APPLICATION

(4a) GENERAL—Do not moisten lath before application. Apply lath, rough or textured side exposed, with the length at right angles to the framing **[or furring]** members. End joints shall center over framing members. Stagger end joints in successive courses on all walls and ceilings; likewise stagger end joints at juncture of walls and ceilings.

(4b) SPACING—Joints shall be brought tight in moderate contact. Units shall be spaced ¼ in. apart at ends.

(4c) NAILS—

(4c1) Use 1⅛ in. 13 gauge, ⅜ in. head, blued, sterilized, long point nails, for ½ in. thickness.

(4c2) Use 6d common, blued or box nails, for ¾ in. and 1 in. thickness.

NOTE—*Large headed nails are unnecessary.*

(4d) NAILING—Space nails 5½ in. apart on centers set ½ in. from the edges. First nail to intermediate framing **[or furring]** members and then at ends. Secure long edges at angles of walls and ceilings, spacing nails 5½ in. on centers and not more than ½ in. from the edge.

(4e) METAL REINFORCEMENT—Slide metal reinforcement over joint after lath has been applied. Do not nail reinforcement.

(4f) PREVENTION OF CONDENSATION—In cold weather apply Weatherwood Insulation to exterior studs **[furring] [rafters],** etc. before temporary heat is applied.

NOTE—*Because Weatherwood Lath does not permit passage of moisture, heating before lining the exterior cold walls, etc., results in a condensation of moisture from the warm, moist air on the inside of the sheathing and framing members. This originally forms as frost, which melts and must be absorbed gradually by the sheathing and frame, since it cannot pass the Weatherwood Lath barrier to be carried off by the air. Weatherwood Lath applied before heating insulates the warm, moist air from the cold exterior walls and eliminates this possibility of condensation.*

United States USG Gypsum Company

Master Specifications

WEATHERWOOD INSULATION as INTERIOR FINISH

NOTE—*Use an unplastered interior wall and ceiling finish, in its natural finish (unfinished), stained or painted. Unfinished or finished with stains, it has a decided value as an interior lining for sound absorption in halls, gymnasiums, churches, schools, etc. When used for acoustical correction, it should not be painted.*

NOTE—*Weatherwood Insulating Boards, Planks and other units when used for interior wall finish may be advantageously decorated by grooving, beading, etc., which may be accomplished on the job by any good mechanic with a Bevel-Devil or similar cutting or grooving tool.*

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words in bracketed bold face type are selective.*

(1) CORRELATIVE PROVISIONS

NOTE—*Provide for the following in other specification divisions.*

NOTE—*Weatherwood Insulation is not a nailing base.*

(1a) CONSTRUCTION—Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

(1b) FURRING—Fur **[all] [exterior masonry]** walls **[and ceilings]** to receive Weatherwood Insulating Tile with **[1 x 2] [specify]** furring strip, accurately shimmed to a true, level plane, set **[specify distance apart to fit the size used]** apart.

NOTE—*Use where tile are nailed. See (4e3) for Cementing to Masonry.*

(1c) FINISH—

NOTE—*Weatherwood Boards or Tile Board may be left natural, or finished with stain or paint.*

(1c1) Cleaning—Remove dirt or stains with art gum or dry wallpaper cleaner. Fill nail holes and abrasions with Red Top Nail-Hyde.

(1c2) Stain—Weatherwood Insulation takes water, alcohol or other types of stain admirably, either in single tones, panels or stencil design.

NOTE—*Where used as acoustical correction, use stain only. Paint fills the pores and materially reduces the acoustical efficiency.*

1c3) Paint— Size with water, glue or oil size before applying oil paint. Water paints, such as Texolite (a USG product), require no sizing.

(2) WORK INCLUDED

NOTE—*Here list and locate aefinitely the wall and ceiling areas to be covered. If more than one thickness, color or surface texture is required, list separately and the respective locations or areas covered. If detail drawings are furnished reference to them here is a convenience.*

(3) MATERIAL

(3a) Wall **[and ceiling]** finish shall be **[Weatherwood Insulation Boards] [and] [Weatherwood Insulating] [Tile Board] [and] [Plank] [Panel Strips] [Mouldings]** as made by the United States Gypsum Company, 300 West Adams Street, Chicago. Colors shall be **[specify]** and textures shall be **[specify] [as designated] [on the detail drawings] [in par. 2].**

NOTE—*Specify "Weatherwood Jnsulation Boards" where exposed with natural, stained or painted finish. Specify Weatherwood Insulating Tile Board where tile effect is desired.*

(3b) Size shall be **[½ in.] [¾ in.] [1 in.]** thick by 4 ft. by 4, 5, 6, 7, 8, 8½, 9, 9½, 10 or 12 ft. long or units cut in panels of symmetrically disposed sizes **[to conform with the detail drawings].**

NOTE—*Use clause above for natural, stained or painted finish. Select the thickness required for insulation value.*

(3c) Size shall be **[low density] [½ in.] [¾ in.] [1 in.]** thick Weatherwood Insulating Tile Board by **[specify sizes] [sizes indicated on detail drawings.]. [All four edges shall be tongue and grooved.]**

NOTE—*Specify low density where used particularly for acoustical sound absorption.*

(4) APPLICATION

(4a) GENERAL—

(4a1) Weatherwood Boards—Continuity of insulation is imperative. Apply boards with the length parallel with the framing members. Where possible, boards shall be of sufficent length to completely span between sills and plates or other structural members. Where end joints are necessary, these shall only be made centered over 2 x 4-in. headers cut in between framing members. Side joints shall center over framing members.

(4a2) Weatherwood Tile Board (Tongue-and-Groove Type)—Do not moisten Tile Board before application. Apply **[rough] [textured] [smooth]** side exposed and tongue up, with the length at right angles to the framing **[or furring]** members. End joints shall center over framing members. Stagger end joints in successive courses on all walls and ceilings.

NOTE—*The above application applies to the standard tongue-and-grooved, 32 and 48 in. long units nailed directly to the framing members.*

(4a3) Weatherwood Tile Board (Square Edge Type)—Tile board shall be applied **[over plaster surfaces] [by means of approved gum-like adhesive] [nailed to special furring strips spaced to accommodate tile sizes and pattern].** Tile shall be laid in the patterns designated **[on the detail drawings] [in par. 2].**

(4b) SPACING—

(4b1) For Weatherwood Boards—Boards shall be spaced ⅛ in. to ¼ in. apart at all edges, if joints are covered—if not covered bring to moderate contact. Bring the boards in close contact with window and door frames and trim.

(4b2) For Weatherwood Tile Board (Tongue and Groove Type)—Tongue and groove joints shall be brought in moderate contact. 32-in. unit shall be spaced 1/32 in. apart at ends; 48-in. unit shall be spaced 1/16 in. apart at ends.

(4b3) Weatherwood Tile Board (Square Edge Type)—Tile shall be placed in moderate contact. Do not force tightly together.

(4c) FINISHING JOINTS OF WEATHERWOOD BOARDS—

(4c1) Panel Strips or Mouldings—Cover joints with Weatherwood Insulation **[Panel Strips] [Mouldings]** detailed. Fit neatly at all intersections or at points in contact with other trim. Secure with finishing nails as specified in (4e) or with approved adhesive.

(4d) NAILS—Use 2-in. finishing nails **[for intermediate nailings on boards (not edges)] [on Tile Board].**

Use 6d or 8d common nails at edges of boards.

(4e) NAILING AND CEMENTING—

(4e1) For Weatherwood Boards or Multiple Planks—Finishing nails shall be driven at an angle with heads neatly set below the surface.

Fill nail holes with Red Top Nail-Hyde.

At all edges, space 6d or 8d common nails 6 in. apart on centers and ½ in. from the edge.

On intermediate framing members, space finishing nails 9 in. apart on centers. First nail the boards to intermediate studs and then nail the edges.

(4e2) For Weatherwood Tile Board or Individual Planks (Nailed)—Space finishing nails 5½ in. apart on centers set ½ in. from the edges.

First nail to intermediate framing **[or furring]** members and then at ends.

Secure long edges at angles of walls and ceilings, spacing nails 5½ in. on centers and not more than ½ in. from the edge. Nails shall be driven at an angle and heads neatly set below the surface.

(4e3) For Weatherwood Tile Board (Cemented to Masonry)—Apply Weatherwood Tile Board to masonry by means of an approved gum-like adhesive. Spot adhesive on back of tile at four corners and at center. Press tile firmly against surface.

Master Specifications

WEATHERWOOD INSULATION as EXTERIOR FINISH

NOTE—*While generally speaking of limited architectural adaptability, Weatherwood Insulation Board as exterior finish has many applications, especially when its moisture-proof insulation value is considered.*

It is particularly adapted to the lighter, less permanent construction where cost is a prime factor, and especially for buildings of but one story, such as small dwellings, garages, summer cottages, portable temporary schools, etc. It is an ideal exterior finish for such temporary construction buildings as offices and tool and material storehouses.

(1) CONSTRUCTION PROVISIONS

Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

Studs and joists should be set on either 16-inch or 24-inch centers depending on height and length of spans. Framing should be braced as in standard frame construction.

(2) APPLICATION, ETC.

The specifications for Weatherwood Sheathing apply likewise to Weatherwood Exterior Finish.

(3) PAINTING

Size thoroughly with a dependable water, glue or oil size. Finish with two (2) coats of any good exterior house paint applied in accordance with the manufacturer's directions.

NOTE—*The painting of Weatherwood Insulation surfaces should be done before the application of the joint battens, trim, etc.*

(4) JOINT BATTENS, TRIM, ETC.

Cover all joints between the Weatherwood boards and all edges with wood batten strips or exterior wood trim, secured through the insulation to the framing members.

WEATHERWOOD INSULATION OVER ROOF DECKS

Since roof insulation applied over the various types of roof decks under Built-up Roofing is customarily purchased by and applied by the roofing contractor usually in one continuous operation, the complete detailed specifications covering the application of Weatherwood Roof Deck Insulation will be found in the USG Built-up Roofing Specification Manual.

INSULATING SHEETROCK* INSULATING ROCKLATH*

Aluminum Foil Types

2 IN 1 MATERIALS—Insulating Sheetrock and Insulating Rocklath are standard ⅜-in. thick products, upon the back of which is mounted a thin, smooth, bright sheet of aluminum. Insulating Sheetrock or Insulating Rocklath are applied to the interior face of exterior walls, rafters, or top story ceilings with the bright aluminum side next the framing members. Thus installed, their heat insulating value is equal to or better than that of standard ½ in. thick Fiber Insulating Board—at the same time Insulating Sheetrock is an excellent interior wall finish and Insulating Rocklath, an excellent plaster base. When the joints of Insulating Sheetrock are reinforced and finished in accordance with the standard Sheetrock specifications, the interior surface may be papered or painted.

ADVANTAGES—In addition to their insulating value, they have all the advantages of Sheetrock (The Fireproof Wallboard) and of Rocklath (the Fireproof Plaster Base) described in detail in The General Commodities Section. They are fireproof, permanent, do not expand or contract, and are easy to install.

The fireproof character of Sheetrock and Rocklath are of outstanding importance. Because of the addition of the metal surface, they prove an even greater fire protection. Both being hydrated materials, resist fire until their hydrated character is destroyed. With metal applied to one side of the board, the escape of moisture from the burning area is further retarded and the circulation of air, and the passage of hot gases, necessary for combustion, is reduced.

A NEW INSULATING PRINCIPLE—Heat travels in three (3) ways as follows:

(1) Conduction—Hold a poker in a hot fire and the heat travels from the fire to the hand along the poker by conduction.

(2) Convection—Stand over an open register; the hot air flows up the pipe. This heat travel is by convection.

(3) Radiation — Heat travels from a fireplace and warms the hand without warming the air between. This is radiant heat.

Heat passing through the walls or roof of a frame building (from inside out or from outside in) must pass across the air space between the studs and rafters. Approximately 75% of such heat travel is by radiation.

Insulating Sheetrock and Insulating Rocklath prevent radiant heat passage. They stop summer heat by reflecting it back as a mirror reflects light.

In winter time, when the heat flow is outward, Insulating Sheetrock and Insulating Rocklath do not insulate by reflection—they insulate by reducing the flow of heat by radiation.

Bright surfaces that are efficient in reflecting light and radiant heat are also efficient in refusing to emit or give off heat by radiation (Kirchoff's Law of Physics).

Insulating Sheetrock and Insulating Rocklath reflect or refuse to emit approximately 90% of the radiant heat coming in contact with them, whereas other materials, such as wood, brick, and fiber reflect but 10% and absorb 90%.

The bright aluminum surface does not dull appreciably. The slight ultimate oxidation reduces but little its reflecting and non-radiating quality.

AUTHENTIC TESTS—Tests on actual wall constructions conducted by Professor F. B. Rowley of the University of Minnesota show Insulating Sheetrock to be as effective as half-inch fiber board insulation in the same construction.

With an outside temperature of 125° F. and an inside temperature of 80° F. simulating summer conditions, the coefficients of heat transmission were 0.205 for the Insulating Sheetrock construction and 0.227 for the fiber board.

With temperatures outside of 0° F. and inside of 80° F. simulating winter conditions, the coefficients of heat transmission were 0.168 for the Insulating Sheetrock construction, and 0.181 for the fiber board.

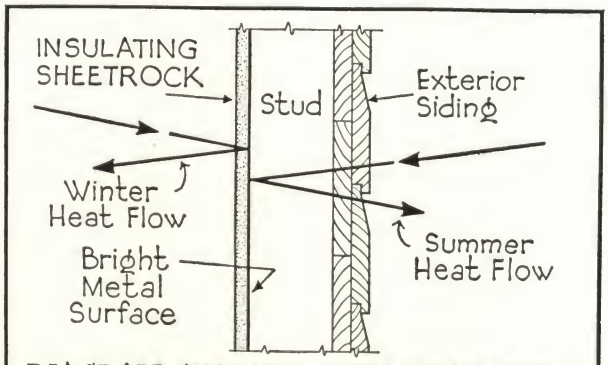


DIAGRAM SHOWING HOW HEAT FLOW IS REFLECTED BY INSULATING SHEETROCK

APPLICATION—Both Insulating Sheetrock and Insulating Rocklath are applied as specified for standard Sheetrock and Rocklath respectively, with the metal side placed against the framing members. For application specifications, see "General Commodities" section for "Sheetrock" and "Rocklath."

The metal must not be placed in direct contact with another surface.

*Trade-Mark

RED TOP* INSULATING WOOL

Fill and Blanket Type • Wall Thick • Fireproof

DESCRIPTION—Red Top Insulating Wool is an extremely light, fluffy wool insulation made of silica—a fireproof material.

The nature of the raw material used, particularly as to purity, permits accurate manufacturing control—the product is absolutely uniform and consists of snowy white, long-fibre wool. It contains no "shot" or other non-insulating materials that add weight.

TYPES—There are five (5) distinct types of Red Top Insulating Wool, each designed to fill a specific application need.

Bulk Wool—Red Top Insulating Bulk Wool is shipped in paper bags, each containing 19 sq. ft. when applied 4 in. thick. The face is identified and crossed by a double red stripe.

Bats—Red Top Insulating Wool Bats are 4 inches thick, 15 inches wide by 18 inches long, shipped in cartons containing 37½ square feet (20 bats). A heavy paper is cemented to the back of each bat and the face is crossed by a double red stripe. The stripe is the architect's and owner's assurance that the material is the full 4 inch thickness of Red Top Insulating Wool Bat and that the bat has not been split into a lesser thickness or an inferior material substituted. Red Top Insulating Wool Bats are also furnished in a paper backed 2 inch thickness (40 bats to the carton) identified on the face by a double blue stripe on each bat.

Strip Wool—Red Top Insulating Strip Wool, a newly developed type, is a continuous 4 inch thick, 15 inch wide by 9 feet long blanket, shipped in cartons containing 33¾ square feet consisting of 3 strips, each folded into thirds for easy removal and application. A heavy paper is cemented to the back of each strip, and the face is identified by a continuous double red stripe. Red Top Insulating Strip Wool is also furnished in a paper backed 2 inch thickness (6 strips to the carton) identified on the face by a continuous double blue stripe.

Nodulated—Red Top Nodulated Insulating Wool is designed for pouring into open spaces, such as between open attic joists or similar areas. It is shipped in paper bags, each containing 7 cubic feet.

Granulated—Red Top Granulated Insulating Wool is especially developed for the "blown-in" method of installation. It is shipped in paper bags, each containing 7 cubic feet.

RESILIENCE—AN OUTSTANDING CHARACTERISTIC—Unlike other fireproof wool insulating materials, Red Top Insulating Wool is springy and resilient—it will not mat. If compressed, it recovers virtually all of its original volume when the pressure is released and is easily fluffed up to its original volume.

Note Full Thickness Over Keys

Red Top Bulk Wool—Ideal for Existing Homes

*Trade-Mark

LOW THERMAL CONDUCTIVITY—The heat conductivity of Red Top Insulating Wool (standard density) is .266 B.t.u.'s per inch thickness, per square foot, per hour, per degree F. difference in inside and outside temperatures. (Tests by Armour Institute of Technology.)

Unusually high in insulating efficiency, it is outstanding when, as customarily used, it is wall thick (4 in.). So used its rating is .066.

LIGHT WEIGHT (DENSITY)—In its standard density, Red Top Insulating Wool weighs but 1½ pounds per cubic foot—the lightest of this class of materials.

CLEAN • VERMINPROOF • PERMANENT—Red Top Insulating Wool is clean and odorless. Insects will not infest it and rodents will not nest in it or displace it. Once placed, it will not disintegrate, mat or settle. The fibers are tough, thoroughly interlaced, and resilient, and remain permanently efficient.

EASY TO INSTALL • LOW COST—An economical form in which to use Red Top Insulating Wool is Bulk Wool. Its dimensions fit snugly into building framework spaced 16 inches on centers. One bag has an actual area of 19 square feet 4 in. thick and when placed between studs, joists or rafters insulates an area of 20¼ square feet. Where desired the paper backed bats or strip wool can likewise be used full wall thick. Insulating efficiency considered, Red Top Insulating Wool is one of the most economical insulating materials on the market. Any intelligent workman can install it in any of its forms (except that which must be blown in by machine) with a minimum of cost.

ADDED FIRE PROTECTION—In frame construction this insulation fills completely and permanently the usual void between the wall studs with fireproof material thus eliminating these fire carrying flues. Top floor ceilings and roofs blanketed with 4 in. of the material act as fire stops.

CONVENIENT PACKAGES—The manner in which Red Top Insulating Wool is packaged adds to its convenience in shipping and handling. Strip Wool is shipped three strips to a convenient carton. Bats are shipped in cartons. The extreme resiliency of Red Top Insulating Wool makes it possible to compress the strips and bats in relatively small volumes. Bulk wool is shipped in bags slightly compressed but easily fluffed up to its original density of 1½ lbs. per cu. ft. Fluffed to its original density, the bag contains 6⅓ cu. ft. of the material.

COVERAGE OF RED TOP INSULATING WOOL

Type of wool	Volume per package at standard density	Coverage per package at standard density	
		4-in. thick including 2x4's	4-in. thick excluding 2x4's
Strip wool in cartons	11¼ cu. ft.	36 sq. ft.	33¾ sq. ft.
Bat wool in cartons	12½ cu. ft. (20 bats)	40 sq. ft.	37½ sq. ft.
Bulk wool in paper bags	6⅓ cu. ft.	20¼ sq. ft.	19 sq. ft.

Any House Can Be Insulated with Red Top Wool

Complete Insulation—Walls and Ceilings

United States USG Gypsum Company

Master Specifications

RED TOP INSULATING WOOL

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words in bracketed bold face type are selective.*

(1) WORK INCLUDED

NOTE—*Here list and locate definitely the wall, ceiling, and roof areas to be insulated.*

(2) MATERIALS

Insulation shall be Red Top Insulating Wool as made by the United States Gypsum Company, 300 West Adams Street, Chicago.

(2a) BULK WOOL—Insulation shall be bulk wool type.

NOTE—*Recommended where framing requirements, thickness, or particular location make this type more practical to install on new work than the strip or bat type.*

(2b) BATS—Insulation shall be in paper backed bat form, 4 in. thick, 15 in. wide x 18 in. long. With identifying double red face stripe.

NOTE—*Recommended for new work where this type is more convenient to handle and install than Strip Wool.*

(2c) STRIP WOOL—Insulation shall be in paper backed strip form, 4 in. thick, 15 in. wide x 9 ft. long. With identifying double red face stripe.

NOTE—*Due to ease of handling and rapidity of installation, this type is recommended for new work.*

(2d) NODULATED—Insulation shall be Nodulated type.

NOTE—*Specify for hand poured installations.*

(2e) GRANULATED—Insulation shall be granulated type.

NOTE—*Specify for machine "blown in" installations, particularly suited to existing work.*

(3) INSTALLATION—NEW WORK

Maintain a continuous uniformly thick blanket of insulation over all areas to be insulated.

(3a) WALLS—

(3a1) Strip Wool—Holding the material in the strip form as it comes from the carton, place the exposed end of the material tight against the top framing member with the paper away from the exposed wool face against the inside of the sheathing and open the strip downward forcing the continuous wool bat between the studs with continuous contact at edges. Where the height requires it, start a second strip at the bottom of first roll with ends in close contact and proceed as above. Fill all irregular interstices and particularly those around the window and door frames with material cut to fit.

Red Top Bat Wool Installed in New Home

Red Top Strip Wool Used in Attic

(3a2) Bat Type—Install the bats ends to end between the framing members. Force the bats firmly against the studs and together at ends. Fill all irregular interstices and particularly those around window and door frames with bats cut to fit.

(3a3) Bulk Wool—Pack the loose wool, fluffed to a density of 1½ lbs. per cu. ft., between the framing members back of the plaster base as this is being applied. Fill all irregular interstices and around window and door frames.

(3b) CEILINGS—Permanent attic floors shall not be installed until insulation is in place.

(3b1) Strip Wool—Holding the material in the strip form as it comes from the carton, place the exposed end of the material against a wall with the paper away from the exposed wool face against the ceiling between the joists. Lay toward the opposite wall or plate, forcing the continuous wool bat between the joists with continuous contact at edges. Butt adjoining strip ends together in close contact.

(3b2) Bat Type—Lay the bats end to end over the finished ceiling, forced firmly between the joists, and together at ends.

(3b3) Bulk Wool—Lay a continuous layer **[specify]** thick over the finished ceiling between the ceiling joists.

(3c) SLOPING ROOFS—

(3c1) Strip Wool—Holding the material in the strip form as it comes from the carton, place the exposed end of the material tight against the **[ridge] [collar beams]** with the paper away from the exposed wool face against the inside of the roof boarding and open the strip downward forcing the continuous wool bat between the rafters with continuous contact at edges.

Where attic is unfinished, the insulation shall be retained by strips nailed to the joist sides; laths nailed over the joists spaced approximately 6 in. on centers; or covered with inexpensive wall board or open mesh wire cloth.

Where attic is finished, follow the insulation installation with application of plaster base as the work progresses.

(3c2) Bat Type—Install the bats end to end between the rafters with one face against the underside of the roof boarding. Force the bats firmly in place and together at ends.

Where attic is unfinished, the insulation shall be retained by strips nailed to joist sides; laths nailed over the joists spaced approximately 6 in. on centers; or covered with inexpensive wall board or open mesh wire cloth.

Where attic is finished, follow the insulation installation with application of plaster base as the work progresses.

(3c3) Bulk Wool—Pack the bulk wool between the rafters to their full depth. Follow the insulation installation with the application of plaster base as the work progresses.

If attic is not to be finished, place tacks at 6 inch intervals in rafters and lace wire in a lattice back and forth to hold the insulation in place or apply open mesh wire cloth over the face of the rafters.

(4) INSTALLATION—EXISTING WORK

Maintain a continuous uniformly thick blanket of insulation over all areas to be insulated. For open areas in attics, etc., use strip, bat or bulk wool.

For inaccessible sections, fill all interstices between the framing members with "blown in" granular type insulation.

All access holes for the introduction of blower hose shall be neatly and accurately made. After installation repair all such holes and leave the building in as good condition as found.

Safe Insulation Around Electric Wiring

Red Top Wool Fits Snugly in Corners

Sound Control Service

Engineering Sales Division

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RESEARCH, DEVELOPMENT and SERVICE

ACOUSTICAL MATERIALS ASSOCIATION—Manufacturers of sound absorbing materials have formed the Acoustical Materials Association, the purpose of which is to promote research in architectural acoustics and furnish architects and builders with reliable data on acoustical materials. Official Laboratories have been established under the direction of the leading authorities on this subject. The Association published its first data in February, 1934, and its third publication in July, 1935. You may obtain a copy of this data by calling the nearest USG Office.

RESEARCH and DEVELOPMENT—All USG Sound Control materials and Systems are the result of directed research at the Building Materials Laboratory of the United States Gypsum Company. This laboratory is associated with and located at the Lewis Institute of Technology in Chicago and covers 10,000 sq. ft. of floor space on four floors of a modern building, especially equipped for research and testing. The research work is carried out under the direction of trained physicists and chemists, architectural engineers and investigators, comprising a personnel of some fifty individuals. Here new materials and methods are produced, tested and developed.

The laboratory is one of the few possessing a complete sound chamber, owned and maintained by a manufacturer of acoustical products; a carefully calibrated acoustical measuring stick to use during the development of acoustical products and as a guide to the scientists who are developing them. It is also used for control tests on the company's output, so that the acoustical absorption and sound insulation afforded by the sound control products of the United States Gypsum Company is constantly maintained equal or superior to the published determinations of recognized acoustical laboratories.

SERVICE—The United States Gypsum Company maintains a fully competent experienced corps of acoustical engineers, completely equipped to assist architects on any problem involving acoustical correction or sound insulation. They render this service, without charge and without obligation, in advance of the building construction or will gladly advise corrective methods for existing buildings in which sound difficulties are experienced.

In auditoria this service includes analysis of the effect of curved or other sound concentrating surfaces, and investigation for objectionable echoes. In each case it indicates changes in design where they seem advisable. Where the reverberation is too great for comfort, recommendations are made for economically covering the necessary areas with acoustical absorbents.

Because the United States Gypsum Company handles all phases of the problem and provides, not only materials for sound absorption, but also a complete system for the insulation of sound, architects are assured that absorption materials will not be recommended where sound insulation is required or vice versa. See USG System of Sound Insulation, page 23.

ACOUSTONE*
Actual Size Showing Surface Texture

*Registered Trade-Mark

ACOUSTONE · USG ACOUSTICAL TILE

Incombustible · Decorative

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PHYSICAL CHARACTERISTICS

COMPOSITION and THICKNESS—Acoustone* is formed from filaments of specially processed stone. Its extremely fine, almost microscopic, porosity provides an unusually high degree of sound absorption. The standard thickness is ¾ in.

TYPES—Acoustone is made in two distinct types:

Acoustone D—This type, slightly more porous than the Acoustone A, is paintable. Lead and oil and similar paints applied in several coats over the surface do not reduce its sound absorbing efficiency.

Acoustone A—This type, while it may be decorated with lacquers and reduced paint coatings without materially affecting its acoustical properties, is designed to be used in its natural form.

ABSORPTION—Coefficients below are by the Official Laboratories of the Acoustical Materials Association:

Acoustone D	Thickness	128 Cyc.	256 Cyc.	512 Cyc.	1024 Cyc.	2048 Cyc.	Red. Coef.
Unpainted	¾-in.	.19	.39	.66	.78	.65	.60
Painted (2 c.)	¾-in.	.24	.52	.69	.66	.58	.60
Unpainted	1.05-in.	.37	.65	.84	.79	.72	.75
Painted (2 c.)	1.05-in.	.43	.71	.83	.77	.69	.75

Absorption Coefficients are based on cemented to plaster mountings. Those for Acoustone A are slightly less than above.

SIZES (AREAS)—Tiles are made in the following standard rectangular sizes: 6 x 6 in., 6 x 12 in., 12 x 12 in., 9 x 18 in. Special shapes and sizes may be obtained when required.

OUTSTANDING DECORATIVE APPEARANCE—In addition to its high degree of acoustical efficiency, it is outstanding in its decorative effect. The surface texture is quite similar to travertine stone, surpassing it, however, in the richness and warmth it supplies through a wider range of color tones. From the viewpoint of design, it is adapted to harmonious, unobtrusive inclusion in any decorative scheme. Ashlar masonry walls for interiors can be constructed with Acoustone facings that are as beautiful as natural stone. Interiors in the modern trend may be delightfully handled in tile with a metallic lustre in many shades and colors. The wide variety of shapes likewise adds flexibility—the tile may be laid up in many interesting patterns. There is no disconcerting mechanical effect. Colored borders, cornices in relief, and modified coffered work are easily obtained. Joints between tile units may be accented with a V profile or suppressed as desired. Struck or rusticated joints are available.

COLORS—Both Acoustone D and Acoustone A are furnished in light-reflecting white, ivory or cream. Special colors will be made to order. Acoustone D may be painted with ordinary lead and oil or similar wall paints without affecting its acoustical efficiency. Acoustone A may be brush or spray painted with any of the brushing or spraying lacquers. Sprayed lacquers, containing bronze powders in suspension, give metallic effects. Tests prove that painting with lacquer does not reduce the acoustical efficiency of the tile. Oil paint, diluted with equal parts of thinner, may be brush applied without significant reduction in absorption.

INCOMBUSTIBLE—Since it is made from specially processed stone filaments, Acoustone is incombustible.

LIGHT WEIGHT—Due to its extremely light weight, it is safely and permanently cemented over plaster in both new and old work.

EASILY CLEANED—The complete and thorough cleaning of the porous structure of Acoustone with an ordinary vacuum cleaner thoroughly evacuates any foreign matter that may become lodged in the tile. Accumulations of grease and dirt on the surface of the material are easily removed by the same method or by using ordinary wall paper cleaner, restoring the original color and appearance. The cost of such cleaning is much less than the cost of decorating an equal area of wall or ceiling; and the wear on the tile, incidental to the cleaning, is so negligible that no appreciable difference is made either in its appearance or sound absorbing ability after repeated cleanings.

DURABLE—Because Acoustone is made from especially processed stone permanently tinted and completely cleanable, it is as enduring as the structure in which it is installed.

SANITARY—Acoustone offers complete sanitation. It is inorganic, durable, completely cleanable. It provides an aseptic, readily and cheaply cleaned sound absorbent for hospitals, sanitoria and restaurants.

INSTALLATION—The manufacture, installation and acoustical design of Acoustone is entirely under the control and is the sole responsibility of the United States Gypsum Company and its authorized erectors.

*Registered Trade-Mark

This policy enables the purchaser to buy a result without reference to the manner in which the result is obtained. It definitely fixes the responsibility as it frees the purchaser or the architect from all details, engineering and installation.

Such a policy, of course, means that the United States Gypsum Company will refuse to install Acoustone where satisfactory results will not be obtained.

The company is prepared to make the installation of Acoustone in busy offices, banks, restaurants, brokers' offices, hospitals, etc., at times so that there will be no interruption in the usual routine.

For this work only experienced mechanics are employed, who will carefully protect the walls, floors and furnishings against damage during the installation.

ECONOMICAL—Acoustone is not expensive to install. It costs more than ordinary wall and ceiling decorating, but by eliminating redecorating costs, over a period of years, the expense is less.

Specifications · ACOUSTONE

LONG FORM

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

NOTE—*List and locate all walls and ceilings to be covered with Acoustone. If more than one thickness of Tile is used, specify the thickness for the various areas.*

(2) BASE

Acoustone shall be applied direct to plaster or similar smooth surface.

NOTE—*On existing work Acoustone is applied over any firm, standard plaster finish.*

(3) ACOUSTICAL TREATMENT MATERIAL

(3a) Acoustical treatment material shall be **[¾-in.] [1-in.]** thick Acoustone **(A) (D)** of colors selected by the architect.

(3b) Joints between Tiles shall be **[a V formed by accurately beveling the tile edges] [as detailed] [specify].**

(3c) Tiles on walls and fields of ceilings shall be of size, shape, disposition and color as shown on the various details and approved shop drawings.

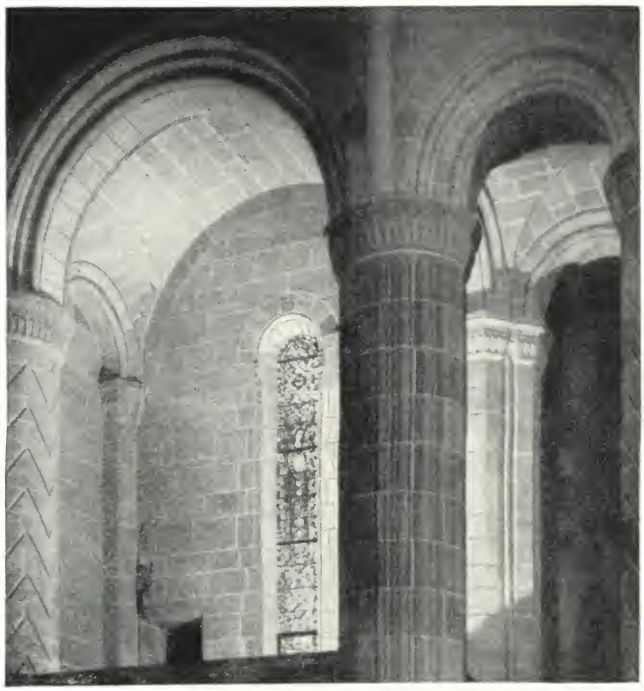
(4) APPLICATION of ACOUSTONE

(4a) Acoustone shall be completely erected by the United States Gypsum Company or one of its authorized erectors of sizes, colors and pattern shown on the drawings and details.

(4b) The Tile shall be laid close, accurately cemented in position in full conformance with the manufacturer's specifications.

SHORT FORM

The contractor shall allow the sum of $..... to cover the cost of acoustical treatment, using Acoustone to be furnished and erected by the United States Gypsum Company or one of its authorized erectors as directed and approved by the architect.



Church of the Holy Child, Philadelphia, Pa.
Geo. I. Lovatt, Architect
Acoustone used on curved surfaces

Corridor in Orthopedic Hospital, Chicago, Ill.
Coolidge and Hodgson, Architects
Ceilings of Acoustone absorb sound and reduce noise

TYPICAL ACOUSTONE PATTERNS

Combinations of Various Colors and Sizes

Acoustone May Be Obtained, on Order, Integrally Colored to Special Shades

SABINITE* ACOUSTICAL PLASTER

Incombustible · Economical

• • •

PHYSICAL CHARACTERISTICS

TYPES—

Sabinite A—For general use on ceilings or above wainscots.

Sabinite B—For troweling to a smooth hard surface, readily cleanable on wainscots or wall surfaces exposed to abrasion.

Sabinite 38—Specially developed to resist moisture in natatoriums, shower rooms, laundries, etc., when applied over Oriental Exterior plaster base. (See below.)

COMPOSITION—Sabinite Acoustical Plaster is a permanent, reasonably priced, sound-absorbing plaster. Sabinite A is substituted, over the standard scratch and brown coats, for hard, sound-repellent plaster finishes. Sabinite No. 38 is applied over Oriental Exterior Stucco base coats where extreme humidity, as in Natatoriums, is present. Gypsum base coats may be used where humidity is less severe but consult manufacturer first. Sabinite absorbs sound because of its great multitude of tortuous, minute passages, which have their start in tiny openings at its surface.

ABSORPTION—Coefficients below are by the Official Laboratories of the Acoustical Materials Association:

Sabinite Type	Thickness	128 Cyc.	256 Cyc.	512 Cyc.	1024 Cyc.	2048 Cyc.	Red. Coef.
A	½-in.	.34	.30	.31	.61	.69	.50
A	¾-in.	.36	.37	.55	.67	.67	.55
38	½-in.	.25	.26	.32	.60	.76	.50

THICKNESS—Applied ½-in. thick in two successive coats, or ¾-in. thick in three coats—each ¼-in. thick, with the usual plasterer's tools.

APPEARANCE—Sabinite presents an interesting surface texture similar to a pebbled, semi-smooth stucco. Sabinite A may be left with a troweled finish.

COLORS—Both Sabinite A and No. 38 are furnished in white and four standard colors or tints: ecru, ivory, cream, buff. Special colors will be furnished on orders exceeding 5 tons. On small orders, Sabinite may be tinted to special colors on the job.

It can be painted or decorated after application without loss of efficiency. (See specifications, page 19.)

INCOMBUSTIBLE—Composed of inorganic aggregates bonded together with gypsum plaster, long known as a fireproofing material, it is incombustible.

DURABLE—Sabinite Plaster is as rugged and durable as the ordinary sand float finish.

It is unaffected by dampness and does not shrink or swell with climatic changes.

SANITARY—Because it contains no vegetable or animal matter, Sabinite is sanitary. Like any gypsum plaster it is vermin proof.

DISTRIBUTION—Sabinite is made at the principal mills of the United States Gypsum Company, conveniently located for lowest transportation costs and quick delivery.

COVERING CAPACITY—One ton of Sabinite A applied in two coats, each ¼-in. thick, will cover a surface of from 100 to 110 sq. yds. The average plasterer can apply 100 sq. yds. of Sabinite A to full specifications in 11 hours.

To mix this material, including delivery to the mechanic, requires but 7 hours of labor.

A ton of Sabinite No. 38 covers from 60 to 75 yards and requires 14 hours of a plasterer's time and 8 hours of mixing labor per 100 sq. yds.

APPLICATION and SUPERVISION—It is applied by the plastering contractor in lieu of the usual finish. Its installation is always supervised by an experienced representative of the United States Gypsum Company.

EASY TO APPLY—Nothing but water is added to make Sabinite ready for application. It spreads with a trowel from the hawk, like ordinary plaster and bonds easily and firmly to the base coat.

ECONOMICAL—The low cost of the material, ease of application and excellent covering capacity, coupled with its relatively high sound absorption, makes Sabinite a most economical material.

*Registered Trade-Mark

Specifications · SABINITE ACOUSTICAL PLASTER

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

NOTE—*List and locate all walls and ceilings to be covered with Sabinite Acoustical Plaster. If Sabinite A, B and Sabinite No. 38 are used, list and locate separately. If different colors of integrally tinted Sabinite are used, specify the colors for the various areas.*

(2) GROUNDS

On walls, in addition to the usual grounds set for the scratch and brown coat plaster base, set additional **[½-in.] [¾-in.]** thick grounds to assure proper thickness of the Sabinite and form nailing for wood trim, etc. All corner beads shall be set to conform to the increased plaster thickness.

(3) ACOUSTICAL TREATMENT MATERIAL

(3a) Acoustical Treatment material shall be **[Sabinite A] [Sabinite B] [and] [No. 38]** Sabinite Acoustical Plaster as manufactured by the United States Gypsum Company.

(3b) Sabinite shall be integrally tinted by the manufacturer at the mill.

NOTE—*Integrally tinted Sabinite should be a shade lighter than the same color would be in paint because the texture of Sabinite casts a slight darkening shadow.*

(4) SCRATCH and BROWN COAT BASE

(4a) SABINITE A and B—All surfaces to receive Sabinite A **[and B]** shall be given scratch and brown coats of gypsum plaster containing no more than two parts of sand (by wt.) to one part of plaster.

(4b) SABINITE No. 38—Hydraulic Sabinite shall be applied over **[Oriental Exterior Stucco] [Gypsum]** Base Coat.

NOTE—*Oriental Interior Stucco Base Coat is a prepared material requiring no sand or other addition except water. It is applied in two coats in place of the regular scratch and brown coats. Use where humidity is severe.*

(4c) The scratch coat shall be thoroughly broomed before the second or brown coat is applied. The second or brown coat shall be deeply raked after straightening.

(5) APPLICATION of SABINITE

The application of Sabinite shall only be made under the supervision of the United States Gypsum Company.

The plastering contractor shall arrange with the nearest sales office of the United States Gypsum Company for the servicing of Sabinite and shall not commence its application until so directed by the manufacturer's service representative.

Sabinite shall be applied in **[two] [three]** coats each ¼ in. thick over a thoroughly dry base coat. The second **[and third]** coat**[s]** shall not be applied until the previous coat has set. The instructions of the service representative for floating and troweling each coat shall be observed throughout regardless of his presence.

PAINTING SABINITE

SPRAY PAINTING—Sabinite may be spray painted. Depending on the conditions and the effects desired the United States Gypsum Company will make definite recommendations as to the paint or spraying lacquer to be used, the type of spraying equipment best adapted to the conditions and application specifications.

Peoples Savings & Trust Bldg., Pittsburgh, Pa.
Press C. Dowler, Architect
Interior quieted with ceiling of natural Sabinite

First Church of Christ Scientist, Montclair, N. J.
Charles D. Faulkner, Architect
Correct hearing conditions obtained with Sabinite

United States Gypsum Company

QUIETILE*

Low Density Wood Fiber Board Absorbent

• • •

PHYSICAL CHARACTERISTICS

DESCRIPTION—Quietile is a decorative interior tile used to absorb sound and correct noisy conditions in offices, restaurants, etc., and to improve hearing in auditoriums, theatres, and buildings of similar use.

It is a wood fiber product but should not be confused with ordinary insulating tiles used primarily for insulating purposes. It has unusually low density and exceptionally high and uniform absorption. It is a homogeneous material made by a unit felting process to produce a material of high acoustical excellence. Its attractive surface is free from surface oddities and puncturing, not uncommon in acoustical materials.

ABSORPTION—Quietile classes among the high-efficiency absorbents, the one-inch thickness having a 70 per cent noise reduction through the significant pitches, 256 to 2048 cycles. This means that through these pitches it absorbs 70 per cent of all sound striking it and that the reverberation time and the noise level in the room where it is used are greatly reduced.

It is important to note in considering the efficiency of Quietile that it has unusually efficient absorption through the significant ranges. This means, for example, that it is almost equally efficient in absorbing the sound of the human voice, around 512 cycles, and the noise of a typewriter, an octave or more higher. This efficiency is especially characteristic of one-inch Quietile.

Quietile Thickness	128 Cycles	256 Cycles	512 Cycles	1024 Cycles	2048 Cycles	Reduction Coefficient
½-in.	.19	.30	.58	.64	.80	.60
1-in.	.30	.52	.73	.82	.75	.70

Absorption Coefficients are based on cemented to plaster mountings.

COLOR and TEXTURE—Quietile is made in two standard textures and two standard colors. The textures are a sanded and a brushed surface texture. The former is a Light Cream in color and the latter is a Light Buff. On order either of these textures or surfaces will be mill-tinted to any of the five standard colors in light pastel shades of Rose, Cream, Blue, Buff, and Green, all of which are high in light reflecting value.

Any color or mixture of colors ground in oil or japan may be applied over Quietile with a brush or spray after diluting with four parts of mineral spirits (turpentine substitute) to one part of color. Spray tinting will use less color and will usually be more economical.

SIZES—Quietile is made in three sizes—12 x 12 in., 6 x 12 in., and 9 x 18 in. Either the brushed or sanded surface or the ½-inch or 1-inch thickness can be had in these sizes. All Quietile units are finished on all four edges with a 3/16-inch bevel. Other sizes may be obtained at a slight increase in cost.

ADVANTAGES—

High Absorption—The absorption at the significant frequencies is extremely high.

Low Cost—In spite of its high efficiency, Quietile is a low cost material—so low in cost that it makes possible the use of acoustical treatment in almost any type of building where noise is a problem.

Appearance—The surface of Quietile is similar to that of other fiber tiles used primarily for decoration. It is free from perforations and other surface peculiarities that fall into a regular pattern. Its efficiency is secured by the natural surface of the tile in combination with a low and accurately controlled density. The result is an appearance just as pleasing as if the tile were made first of all for a decorative rather than an acoustical effect. This appearance is suited to any type of interior.

Easily Cleaned—Cleaning is always cheaper than redecorating. Quietile can be cleaned with a vacuum cleaner. The mill-tinted pastel shades are deep tinted to withstand several cleanings before re-tinting becomes necessary. Painting reduces absorptive capacity and should not be resorted to. A change in color should be accomplished by tinting or staining.

Easy Erection—Quietile is easily and quickly erected in either an old or a new building.

QUIETILE • SANDED TEXTURE • ACTUAL SIZE

*Registered Trade-Mark

Specifications • QUIETILE

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

NOTE—*List here all walls and ceilings to be covered with Quietile. If more than one thichness of material is to be used, specify the thickness for the various areas.*

(2) BASE

NOTE—*Describe base. Quietile may be applied to the following surfaces:*

(a) *On new work, a good level brown coat or plaster offers the best base for Quietile.*

(b) *Quietile may be applied direct to any plastered surface if the plaster is in good condition.*

(c) *Quietile may be applied to furring strips. If this method is used with an open air space back of the furring strips, stretch a paper membrane over and attached to the strips to prevent passage of air through the tile with the resultant deposit of dirt on the tiled surface.*

QUIETILE • BRUSHED TEXTURE • ACTUAL SIZE

(3) ACOUSTICAL MATERIAL

(3a) Acoustical material shall be Quietile **[1 in.] [½ in.]** thick in **[a natural color] [mill tinted in standard shades] [cream] [green] [rose] [buff] [blue]** and **[sanded] [brushed]** surface.

(3b) Joints between tile shall be a 3/16 in. "V" formed by accurate beveling.

(3c) Tile shall in general be 12 x 12 in. with special sizes as shown on the various details.

(4) APPLICATION of QUIETILE

NOTE—*Quietile may be applied in a diagonal or a straight pattern with a border effect if desired. Other patterns may be worked out but they will require special tile sizes.*

(4a) Quietile shall be completely erected by the United States Gypsum Company or by one of its authorized erectors.

(4b) The tile shall be cemented or cemented and nailed in position, care being taken to align tile and maintain an even surface in full conformance with the manufacturer's specifications.

PERFATILE*

Incombustible Perforated Metal Pan Type

• • •

PHYSICAL CHARACTERISTICS

DESCRIPTION—Perfatile is a perforated metal tile concealing highly absorbent pads of mineral wool. The edges of the tile are beveled and returned vertically to be held firmly in place by special tee runners. The tile are painted to comply with rigid specifications and to give a finish pleasing in color, high in light reflection, and protected against abrasion due to ordinary maintenance cleaning.

The mineral wool pads are furnished either completely enclosed by a fire resistive membrane or wrapped in muslin. With the latter type the top of the construction is fully sealed with fire resistive membrane during erection. Either type of pad eliminates the so-called breathing action and avoids the accumulation of dirt on the surface which would result in a loss of absorption and an undesirable condition from the standpoint of sanitation.

ABSORPTION—In addition to its being the highest type of acoustical treatment from a construction standpoint, Perfatile is also one of the best from the standpoint of absorption efficiency. Its absorption coefficients present a fairly flat curve at the significant pitches, meaning more than average uniformity through the most important sound frequencies. Coefficients below are by the Official Laboratories of the Acoustical Materials Association.

Perfatile Type	128 Cycles	256 Cycles	512 Cycles	1024 Cycles	2048 Cycles	Red. Coef.
Muslin Wrap. Pad	.37	.52	.96	.94	.88	.85
Memb. Enc. Pad	.43	.61	.91	.88	.77	.80
Mounting: Metal supports applied to 1 x 2-in. wood furring.						

*Trade-Mark

COLOR—Perfatile is painted a light ivory color, just off from dead white, to provide warmth with maximum light reflection.

SIZES—Perfatile is made in units 12 x 24 in. with a center groove which gives the effect of 12 x 12 in. units.

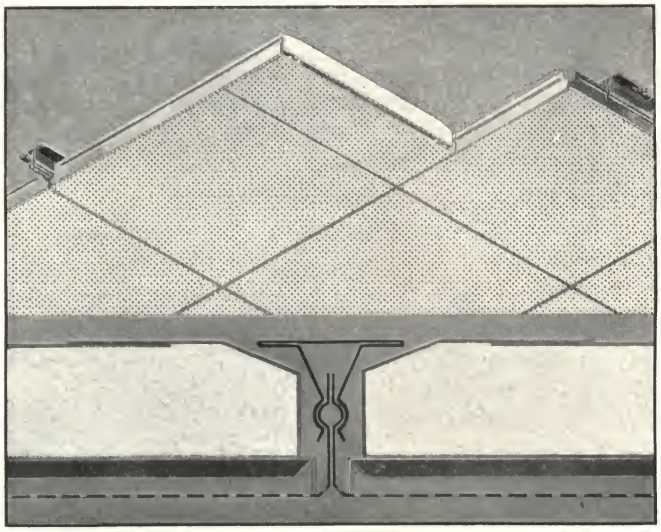
ADVANTAGES—

Fireproof—The metal tile and the mineral wool pads are entirely incombustible. The pad wrapping is all flame-proofed and fire resistive.

High Efficiency—The table above shows the extremely high absorption of Perfatile.

Washable—The painted metal surface of Perfatile may be washed many times before it becomes necessary to repaint it. Washing in no way affects the absorption efficiency of the tile or its appearance.

Paintable—Perfatile can be repainted many times without affecting the absorption efficiency of the construction. The perforations constitute approximately fourteen per cent of the total tile surface, and although small enough to blend into the neutral color of the tile, they are still large enough to maintain full absorption efficiency unaffected by many paintings.



CROSS SECTION

Specifications · PERFATILE

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

NOTE—*List and locate all walls and ceilings to be covered with Perfatile.*

(2) BASE

(2a) Where suspended ceiling construction is used, 1½ inch carrier channels spaced not to exceed 4 ft. on centers, shall be furnished in place by others. The 1½-inch channels shall be hung so as to present a level under-surface. Sufficient cross channels shall be wired in place across the top of the 1½-inch carrier channels to hold them in position and prevent swaying.

(2b) Where Perfatile construction is to be held against concrete joist construction, wire ties shall be furnished in place by others on not more than 4-ft. centers along all joist bottoms. These ties shall consist of two No. 10 gauge galvanized wire projecting 4 inches below joist bottom. The ties must be carefully lined up in lines at right angles to the joists.

(3) ACOUSTICAL TREATMENT MATERIAL

Acoustical treatment material shall be Perfatile, a perforated metal tile, 12 x 24 in. in size, with a center groove giving the appearance of a 12 x 12 in. tile, the edges of which are beveled and return vertically to be held firmly in place by special tee runnners. The perforated metal tile shall conceal a mineral wool absorbent pad held slightly away from the perforated metal surface by means of pad support runners. The absorbent pad shall be completely enclosed and sealed on four edges, face, and back with a flame-proof membrane. (Or the absorbent pad shall be completely wrapped in flame-proof muslin and the top sealed during erection with flame-proof membrane.)

The perforated metal tile shall have a prime and finish coat of baked enamel on the back, and on the face a prime coat, an intermediate coat, and a finish coat of baked enamel.

(4) APPLICATION of PERFATILE

(4a) SUSPENDED CEILING CONSTRUCTION—The acoustical contractor shall wire or clip the special tee runners to the under-surface of the 1½-inch carrier channels, furnished in place by others, spacing the tee runners on 24-inch centers to hold the perforated metal tile. Perforated metal tile, pad supports, and absorbent pad shall be carefully assembled and pressed into position on the special tee runner. All edges shall be kept in alignment and care must be taken to secure a level under-surface. A suitable moulding shall be furnished in place by **[the acoustical contractor] [others]** at the junction of the perforated tile ceiling with the walls and columns. Care shall be taken in cutting and fitting the tile around all openings.

(4b) PLASTERED CEILING CONSTRUCTION—

NOTE—*Same as in (4a) except that the special tee runners shall be attached to the present ceiling by means of suitable clips or wire and brought to a level surface.*

SHORT FORM

Perfatile treatment shall be furnished and erected by the United States Gypsum Company or one of its authorized erectors on all areas indicated on plans to receive acoustical treatment.

USG SYSTEM of SOUND INSULATION*

Fireproof Wall and Floor Constructions

• • •

DESCRIPTION

PURPOSE—To prevent the passage of sound from one room to another.

THEORY and DESCRIPTION—Sound passes through a wall, floor or ceiling by vibrating it as a diaphragm. The sound strikes it and sets it into vibration. This vibration sets up new sound waves, reduced in intensity on the opposite side. The USG System of Sound Insulation is built upon the principle of providing room boundaries in which one side can vibrate while the other side does not. This is accomplished by constructing a furred surface supported on springs.

The regular plastering system is applied directly to the spring supported furring. Concrete floors may be poured on the resiliently supported sleepers (see details, page 24).

ADVANTAGES—The USG System of Sound Insulation possesses the following advantages over other methods of sound insulation.

(1) Permanence—The efficiency of this construction, being primarily obtained by steel spring devices, is maintained permanently.

(2) Fireproofness—Only incombustible materials, steel and gypsum, are employed.

(3) Economy—Because of its simplicity of construction, the USG System of Sound Insulation offers a maximum of efficiency at a reasonable cost.

SALE and INSTALLATION—The USG System of Sound Insulation in Fireproof Construction is sold and installed only by the United States Gypsum Company or its authorized erectors which assures undivided responsibility for the results. All work is installed by trained mechanics under strict supervision.

ITEMS FURNISHED and INSTALLED—The following items are furnished and installed in the USG System of Sound Insulation (See details, page 24).

Ceilings—Resilient Saddles, 1½-in. Channel Runners, Furring Runners, Rocklath, Thermofill.

NOTE—*We do not include plaster or hanger rods. Hanger rods should be furnished by others, 2 by 4-ft. centers with first hanger 6 in. from all walls.*

Walls—Resilient Wall Clips, Furring Runners, Rocklath, Cornerite.

NOTE—*We do not include tile walls or plaster.*

Floors—Resilient Sleeper Chairs with tie wire and grout, Metal Sleepers, Thermofill, Metal Ts, Rocklath, metal lath and concrete slab.

NOTE—*We do not include the finished flooring.*

SPACE REQUIRED—The space required for the installation of the USG System of Sound Insulation is as follows:

Ceiling—Not less than 6 in. to the bottom of Rocklath.

Walls—2⅛ in. from the face of tile wall to outside face of Rocklath.

Floor—5 in. from the top of the floor slab to the top of the concrete slab to receive flooring.

Specifications • SHORT FORM

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*This specification should be included under a separate heading of "Sound Insulation".*

(1) WORK INCLUDED

NOTE—*Here list and locate clearly the walls, floors and ceilings to be treated. Also indicate the following areas clearly on the plans:*

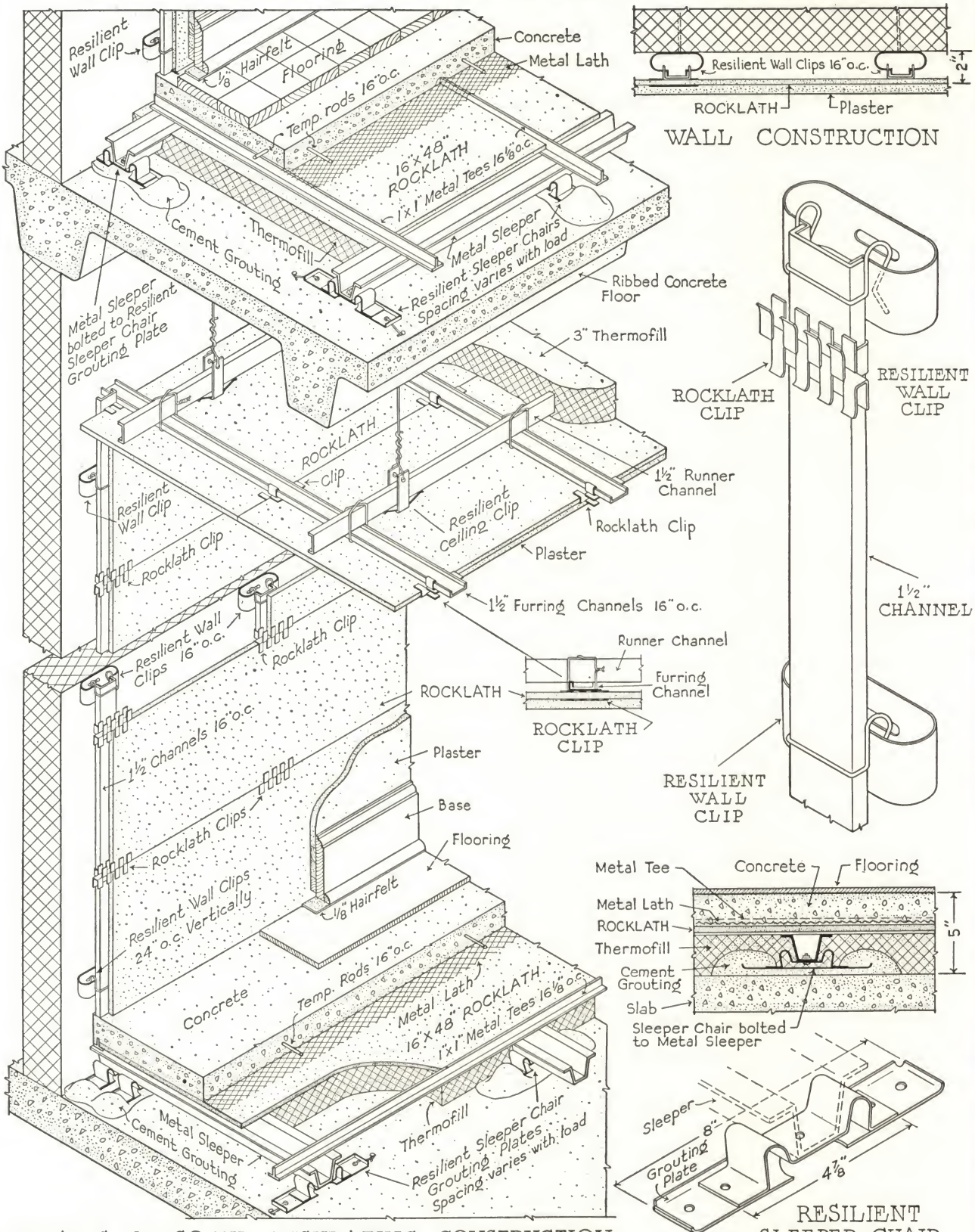
Indicate partitions by heavy black line on the side to be insulated. Indicate floors and ceilings on room schedules and by notations on floor plans and sections.

(2) SOUND INSULATION

The sound insulation as above listed and shown on plans shall be the USG System of Sound Insulation furnished and installed by the United States Gypsum Company, 300 West Adams Street, Chicago, Ill., or its authorized erectors.

*Trade-Mark

USG SYSTEM OF SOUND INSULATION



TREMBAR RESILIENT MACHINERY MOUNTINGS

• • •

DESCRIPTION

PURPOSE—To prevent the transmission of noise and vibration from motors, motor generators, ventilating equipment, printing presses, and many other types of machinery, all of which frequently produce annoyance through vibration or noise.

DESCRIPTION—Trembar* Sound Insulative Machine Base has been especially designed for use under machinery of all kinds to localize vibration and the resultant noise.

Its construction is essentially that of a rigid platform supported on very sensitive steel springs. These resilient springs float the machine so that practically none of its vibration is transmitted to the floor upon which the machine rests. The platform has no connection of any kind with the floor except through the resilient springs. The action of the springs in the base might be likened to those in an automobile which float the body of the car free from the vibration produced in the running gear by the road.

ADVANTAGES—Trembar Resilient Machinery Mountings possess the following advantages:

(1) Adaptability—Each base is especially designed and built for the piece of equipment to be supported. The major factors in determining the area of the base are the horizontal projections of the machine, the weight of the machine, the relative position of the center of gravity and the R.P.M. of the machine. The number and type of spring units are determined by the weight of the machine base and the R.P.M. of the machine. The base is adapted to the machine it carries.

(2) Economy—By the use of this base, equipment can be placed in that part of the building most desirable from the standpoint of efficiency and economy, without regard to the possibility of disturbances to adjacent rooms.

(3) Structures with Mixed Occupancy—Trembar Bases so fully free buildings from the vibration and noise produced by machinery that it is possible to include space for manufacturing in office buildings without causing the least annoyance to tenants.

(4) Hotels and Hospitals—The machinery necessary to the operation of these buildings may be quieted by the use of Trembar Mountings under all rotating or oscillating equipment.

(5) Installation—Bases are shipped ready for installation by others, or they will be installed complete by the Engineering Sales Division of the United States Gypsum Company or its authorized erectors.

DEMONSTRATED ACCOMPLISHMENTS—Trembar Vibration Isolating Equipment is in successful operation in the United States Navy, Coast Guard Vessels; Bureau of Standards; most of the newer broadcasting stations; and in many hotels, hospitals, apartments, office buildings, and factories. It is completely adaptable to practically any vibration problem.

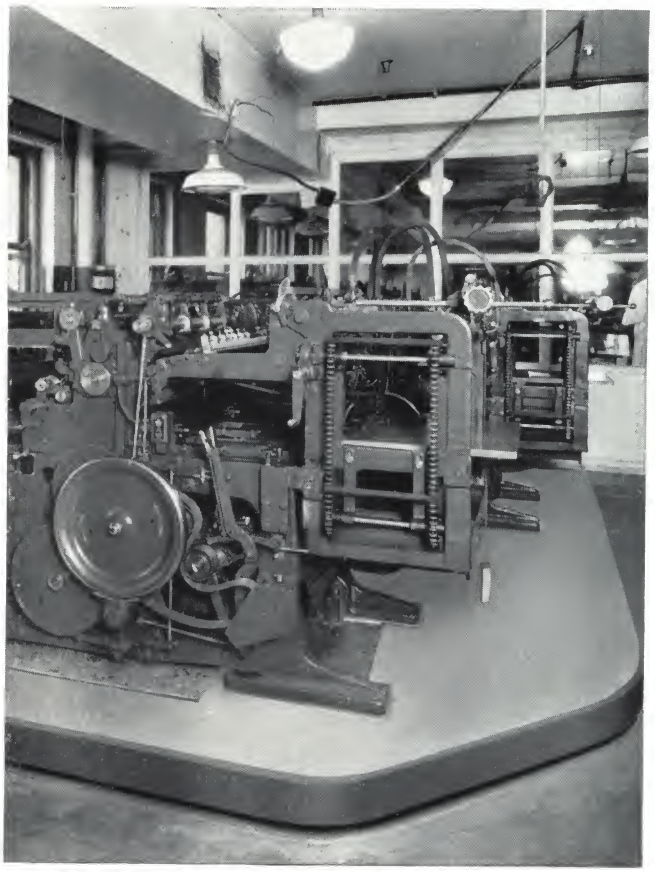
*Trade-Mark

Specifications

SHORT FORM

NOTE—*List under heading of "Sound Insulation."*

Under all **[name and describe items of equipment to be insulated]** the **[specify which]** contractor shall install Trembar Resilient Machinery Mountings as designed and manufactured by the United States Gypsum Company.



U S
BUILDING MATERIALS

NU-WOOD
BALSAM-WOOL

WEYERHAEUSER
FOREST PRODUCTS

WOOD CONVERSION COMPANY

ST. PAUL · · · MINNESOTA

WOOD CONVERSION COMPANY
ST. PAUL MINNESOTA
DISTRICT OFFICES:
NEW YORK, N. Y. 155 E. 44TH ST.

Makers of
BALSAM WOOL *and* NU-WOOD
CHICAGO, ILL. 360 NO. MICHIGAN AVE.

BALSAM-WOOL *Insulation* APPLICATION INFORMATION

DESCRIPTION

Balsam-Wool Blanket is a flexible form of heat and sound insulation. It is made from new wood fibers chemically treated and permanently cemented together into a fleecy wool form. It is sealed on sides and edges with asphalt coated crepe kraft, which is flexible, wind-proof, water and moisture-proof and folded over at the edges to form nailing flanges.

Wood pulp, made from balsam, spruce, Norway or white pine, is chemically treated to make it fire-resistant, moisture-resistant, and rodent and vermin proof. Water-proofing is further affected by the special blend of asphalt which seals the kraft to the wood fiber mat.

THERMAL CONDUCTIVITY

The conductivity of one-inch thick Balsam-Wool Blanket is .246 B.t.u. per hour per square foot, per degree difference in surface temperature at an average temperature of 70° F. (J. C. Peebles, Armour Institute of Technology, Chicago).

Generally speaking the less a material weighs per cubic foot the greater its insulating value. The remarkably low thermal conductivity of Balsam-Wood is due to the arrangement of the fibers in the wool mat. 92% of Balsam-Wool is "still or dead" air.

AN EFFECTIVE SOUND DEADENER

Balsam-Wool has remarkable efficiency as a sound deadening material because it has the ability to both absorb and reflect sound waves.

PUNCTURE-PROOF

The creped surface of Balsam-Wool Blanket is capable of 25% stretch, rendering it virtually puncture-proof and unusually tough and flexible.

MOISTURE-PROOF

Both in its fiber mat and in its surfacing Balsam-Wool is manufactured to be thoroughly moisture-proof.

WIND-PROOF

The tough, creped, asphalt-lined surface of Balsam-Wool is especially designed and manufactured to make the finished product absolutely wind-proof.

FIRE-RESISTANT

Balsam-Wool will not support combustion. The mat is chemically treated to resist fire. It will char while exposed to flame, but will not smolder or burn after the flame is removed.

SANITARY—VERMIN-PROOF

Balsam-Wool does not attract or harbor rats, mice or vermin. It is clean, odorless, and sanitary.

PERMANENT

By knowing exactly what insulation material must do after it has been applied, the manufacturers of Balsam-Wool have designed it to be moisture-proof, fire-resistant, wind-proof, vermin-proof, and therefore permanent. It cannot sag, settle or disintegrate. It will retain all of its original insulating efficiency as long as the building lasts.

WOOD CONVERSION COMPANY
ST. PAUL MINNESOTA
DISTRICT OFFICES:
NEW YORK, N. Y. 155 E. 44TH ST. CHICAGO, ILL. 360 NO. MICHIGAN AVE.

Makers of
BALSAM WOOL *and* **NU-WOOD**

UNIFORM QUALITY

During the manufacturing process, Balsam-Wool is under constant laboratory supervision to assure uniformity.

DENSITY, WIDTHS AND THICKNESSES

Density—Balsam-Wool Mat 2.2 lbs.
Thicknesses—½ in., 1 in., and Wall-Thick
Widths—½ in. and 1 in.; 16, 24, and 33 in.
Wall-Thick—16 and 24 in.

LOW COST OF INSTALLATION

The three standard widths meet all average construction requirements. The carpenter cuts only to length. Its flexibility makes it easy to fit into angles and around corners without waste. In its light, blanket form, it is easy and quickly installed.

SPECIFICATION—BALSAM-WOOL HEAT INSULATION

For insulating Walls, Floors, Ceilings and Roofs of Frame Construction including Masonry Veneer and Frame Stucco and Exterior Masonry Walls.

APPLICATION

General—Maintain continuity of insulation between joist and rafter ends. Make joints tight throughout, especially around door and window openings. Use full length strips of Balsam-Wool. Where joints are necessary, lap and cover with wood laths nailed through to boarding or headers.

Frame Walls and Roofs—Apply Balsam-Wool vertically between studdings and rafters, leaving an air space behind insulation. Cover flanges or flaps on Balsam-Wool with wood laths nailed through flanges to sides of studs or rafters, making a continuous air-tight joint. Top and bottom of each wall section should be fastened with laths nailed through insulation to sills, plates or headers. (See Figure 2.) Remove a portion of mat of Wall-Thick Balsam Wool to make top and bottom fastening easier.

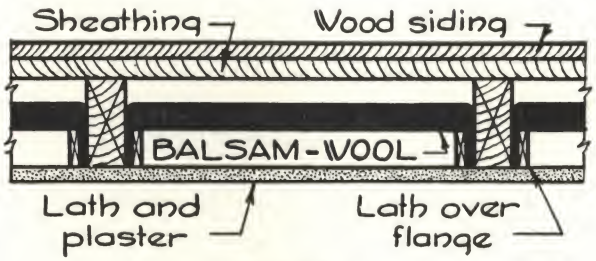


FIGURE 1

Floors and Ceilings—Tack overlapping flanges of Balsam-Wool to face or under side of joists and cover with 1 x 2-in. furring strips. Provide headers between ends of joists over which ends of insulation shall be secured with laths nailed to headers.

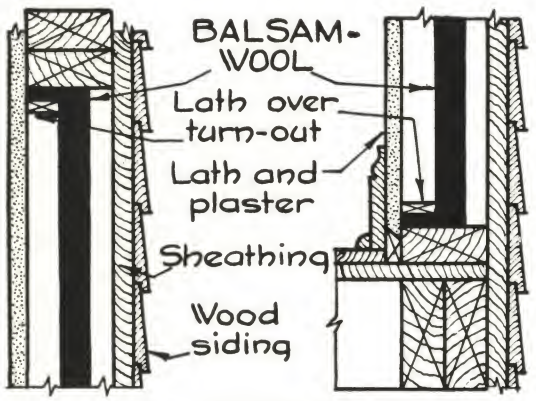


FIGURE 2

Balsam-Wool may also be applied *between* ceiling or floor joists in same manner as recommended for walls and roofs. It may be installed either from below or above. Flanges should be covered with wood lath and nailed to form a continuous air-tight joint.

Masonry Walls—Fur masonry walls vertically with 1 x 2-in. furring set 16 in. o.c., shimmed plumb and true and substantially secured. Apply Balsam-Wool between furring strips. (Figure 3.) Tack overlapping flanges to faces of furring strips and cover with 1 x 2-in. furring strips nailed through flanges to first set of strips. Cut in cross furring between furring strips at top and bottom and secure ends of insulation with laths nailed to cross furring.

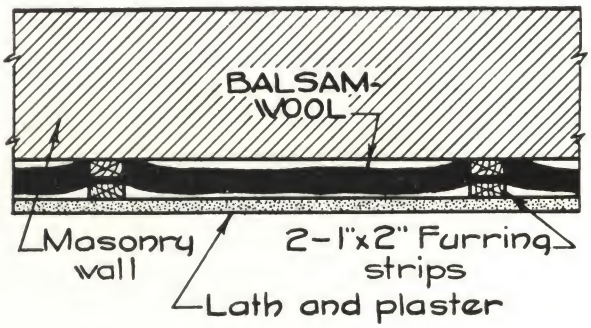


FIGURE 3

WOOD CONVERSION COMPANY
ST. PAUL MINNESOTA
DISTRICT OFFICES:
NEW YORK, N. Y. 155 E. 44TH ST.
CHICAGO, ILL. 360 NO. MICHIGAN AVE.

Makers of
BALSAM WOOL *and* **NU-WOOD**

SPECIFICATION—BALSAM-WOOL SOUND INSULATION—FOR WOOD FRAME PARTITIONS

Framing—Partitions of 2x4-in. studs should be framed double, staggered on 6-in. soles and plates. Studs of each partition should be set 16 in. o.c., the studs of one centering between the studs of the other.

APPLICATION

Weave 1 in. Balsam-Wool horizontally between the two sets of studs. Secure the insulation to the face of one set of studs with laths nailed through the insulation. Lap all horizontally and vertical joints at least 3 in. Tension on all strips shall be equal to prevent opening of the joints between supports. (Figure 4.)

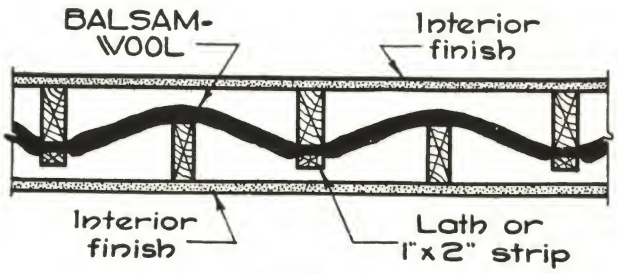


FIGURE 4

SPECIFICATION—BALSAM-WOOL FLOOR DEADENING SYSTEM

In addition to the familiar practice of applying Balsam-Wool for sound deadening treatment over sub-floor under furring strips with the finished floor fastened to the furring strips, architects have designed a floor deadening system which has proven practical and efficient for all types of construction.

Balsam-Wool Floor Deadening System accessories are packaged for convenience. Two packages comprise a unit of sufficient Nu-Wood blocks and strips of deadening felt with metal strips attached to apply 1000 sq. ft. of Balsam-Wool in accordance with the following specifications.

APPLICATION

Balsam-Wool Floor Deadening System—Apply ½ in. or 1 in. Balsam-Wool (33 in. in width) over sub-floor at one end of room, running at right angles to direction of finish flooring. Turn Balsam-Wool up to plaster ground on side and ends. Place 2x2-in. furring strips 16 in. o.c. over and paralled to Balsam-Wool allowing approximately 4 in. between first strip and wall. Cover furring strips with strips of deadening felt—metal straps up. Fasten with small nails at several points along furring strip to hold felt in place. Place a Nu-Wood block under furring exactly below each metal strap, striking the furring strip a sound blow to imbed the block into Balsam-Wool. Nail metal straps to sub-floor using 1¼-in. 10-gauge, barbed, large-headed, galvanized roofing nails, placing nails in holes nearest ends of strap. If first nails do not hold furring strip tightly, nail through one or both remaining holes.

Lay second width of Balsam-Wool overlapping first width about 3 in., and turn up at walls to plaster ground. Continue as above until entire surface of sub-floor is completed. Thoroughly calk all pipe and conduit outlets with Balsam-Wool trimmings.

Note: If pipe or electric conduits are laid on sub-floor, apply Balsam-Wool over them. If pipe or conduits run under furring strips at right angles, notch strips to receive conduits, making notch of sufficient size to prevent compression of Balsam-Wool over conduit. If conduit runs diagonally under furring strips run a furring strip parallel to conduit on one side as shown in figure 72, taking care that these strips do not come in contact with other furring strips.

Note: In Fireproof Construction imbed beveled sleepers in concrete. Apply Balsam-Wool Floor Deadening System on furring strips running at right angles to sleepers and metal straps nailed into sleepers.

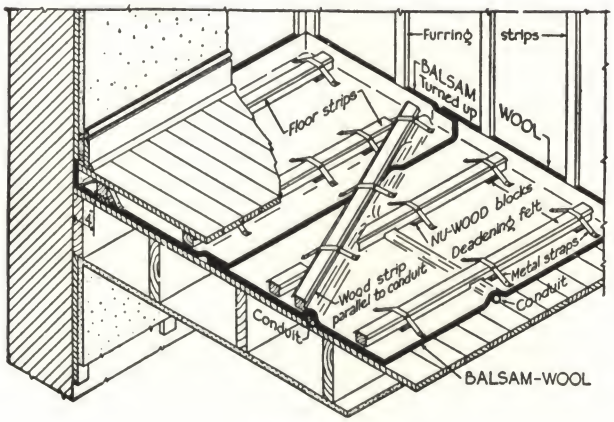


FIGURE 5

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NEW YORK, N. Y. 155 E. 44TH ST.

Makers of
BALSAM WOOL *and* **NU-WOOD**

CHICAGO, ILL. 360 NO. MICHIGAN AVE.

NU-WOOD *Interior Finish* APPLICATION INFORMATION

WHAT NU-WOOD IS AND DOES

Nu-Wood is processed wood. Clean, new wood is separated into individual fibers which are assembled under pressure to form a board of many uses, one of which is Interior Finish.

Nu-Wood Interior Finish is installed over wall and ceiling surfaces of plaster, masonry, or wood in old construction or over framing in new construction to take the place of lath and plaster. It needs no painting or decorating. Its soft shades of tan and its interesting surface texture give Nu-Wood rooms unusually decorative effects. Yet Nu-Wood does more than decorate. It insulates against heat and cold. It hushes noise. It does all these things in one operation.

Nu-Wood is made in several pre-decorated units in a variety of sizes. Any required thickness over ½ in. (in multiples of ½ in.) is available. Each unit is provided with edges which experience has shown to be best suited for carefully designed interior finish application.

NU-WOOD BOARD

Description—Square edge structural insulating boards with a soft neutral wood-brown color. It blends harmoniously with any scheme of decoration and furnishings. One side has a smooth screen finish—the other a unique individual texture.

Nu-Wood Board is used on walls and ceilings with moldings of Nu-Wood, wood or metal —as a center piece in a field of other Nu-Wood units—as a border.

Sizes—4 ft. wide x 4, 6, 7, 8, 9, 10, and 12 ft. long. Full ½ in. thick. Thicknesses up to 2 in., made by laminating ½-in. layers.

NU-WOOD BEVEL-LAP TILE

Description—Rectangular tile units. All four edges are provided with the Bevel-Lap joint (see Figure 1). Available in a harmonizing color range varying from light tan to rich wood-brown. Ivory tile can be furnished when light reflection is an important factor.

Nu-Wood Tile is laid in various patterns and in combination with other Nu-Wood Interior Finish Units, such as Nu-Wood Board, Nu-Wood Moldings, and Nu-Wood Plank and Nu-Wood Wainscot.

Sizes—Standard sizes 8 x 8 in., 12 x 12 in., 12 x 24 in., 8 x 16 in., 16 x 16 in., 16 x 32 in., 16 x 48 in., 24 x 24 in., 24 x 48 in. Special sizes, 6 x 6 in., 6 x 12 in., 18 x 32 in., 18 x 48 in., or other dimensions, can be furnished on order.

Thickness—Full ½ in.

FIGURE 1

NU-WOOD BEVEL-LAP PLANK

Description—Rectangular plank units. Available in Beaded Bevel (Figure 2) and in a harmonizing color range varying from light tan to rich wood-brown. Ivory Plank can be

FIGURE 2

furnished where light reflection is an important factor.

It may be used to advantage in combination with Nu-Wood Board, Nu-Wood Bevel-Lap Tile, Nu-Wood Moldings, and Nu-Wood Wainscot.

Sizes—6, 8, 10, 12, and 16 in. wide x 6, 8, 9, 10, and 12 ft. lengths.

Thickness—Full ½ in.

NU-WOOD WAINSCOT AND CHAIR RAIL

Description—Same composition as other Nu-Wood units designed particularly for lower wall use. The surface texture is a coarse, loosely woven fabric effect with a hard finish. Side edges have a shiplap joint. (See Figure 3.) It has deep wood-brown color to harmonize with other Nu-Wood units.

FIGURE 3

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Sizes—2 ft. and 4 ft. widths x 3, 4, and 5 ft. heights. Chair Rail is 2¾ in. wide x 8 ft. 0 in. long with square finished top and bottom edges. Both Wainscot and Chair Rail are ½ in. thick.

NU-WOOD ACCESSORIES

Moldings, Border Strips, Panel Strips, and Panel Blocks.

Description—These Nu-Wood accessories are accurately fabricated from Nu-Wood Board and have the regular Nu-Wood color. Exposed surfaces are smooth finish.

Accessories are designed for use in combination with Nu-Wood interior finish units.

Sizes, Thicknesses, Etc.—

Moldings—$\frac{7}{16}$ in. thick, all 8 ft. long (detailed in Figure 4).

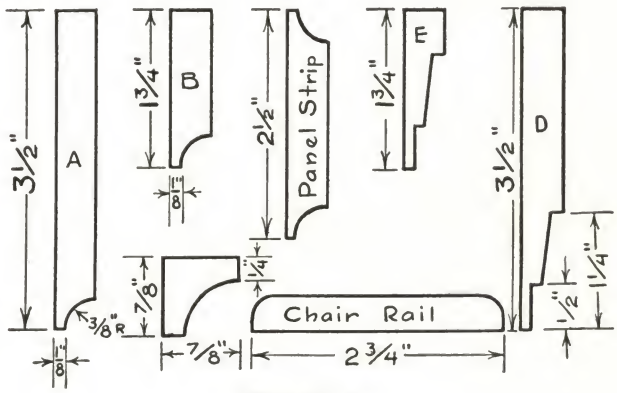

FIGURE 4

Border Strips—½ in. thick, 15 in. wide x 4 ft. long. Square edge on one side, square edge bevel on other side and both ends.

Panel Strips—2½ in. wide x 8 ft. long with cove on both edges.

Panel Blocks—Octagonal, 5 in. wide with four of the edges coved to match Panel Strips. They are designed for use at intersection of Panel Strips.

NU-WOOD IS PRE-DECORATED AND TAILOR-MADE

Nu-Wood units, unlike some materials used on walls and ceilings, are tailor-made to fit the exact requirements of the area to be treated. Only simple steps need be followed in planning the treatment and in applying the units.

Nu-Wood units may be grooved and beveled, of course, but this type of work on the job is not necessary. However, when some extra decoration is wanted Nu-Wood units are easy to decorate with a special hand tool known as the "Bevil-Devil." A few easy border and spot beveling treatments are shown in Figure 5. It is much less expensive to provide this extra decoration right on the job than to buy specially designed ornaments. Nu-Wood's entire plan of application keeps the carpenter in mind—making the work as easy as possible for him and assuring results which are bound to be satisfactory.

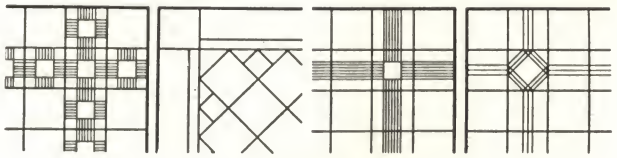

FIGURE 5

The Bevil-Devil—A standard grooving, cutting, and beveling tool in the form of a plane with which Nu-Wood Interior Finish Units may be decorated. Illustrated in Figure 6. Cuts which may be made with the Bevil-Devil are illustrated in Figure 7.

Borders—Areas on which Nu-Wood Interior Finish Units are used do not require borders. Sometimes, however, they are desired. Special

FIGURE 6

panel strips and blocks are provided to make borders (see accessories), and the "Bevil-Devil" tool may be employed in their design. Borders may be either overlaid or set into the design.

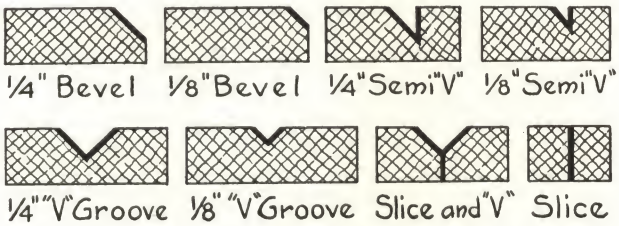

FIGURE 7

Light Outlets—It is often desirable to add a decorative touch around a light outlet on wall or ceiling. Nu-Wood units may be decorated for this purpose with the "Bevil-Devil" tool or with stencils and overlaid or set into the design. They

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may also be cut out of Nu-Wood Board in any number of shapes and sizes. (See Figure 8.)

Moldings and Corner Treatments—Nu-Wood Moldings (see Figure 4) are used singly or combined at intersection of wall and ceiling—for paneling—for wall or ceiling decorations. If preferred, wood or metal moldings may be used for the same purposes.

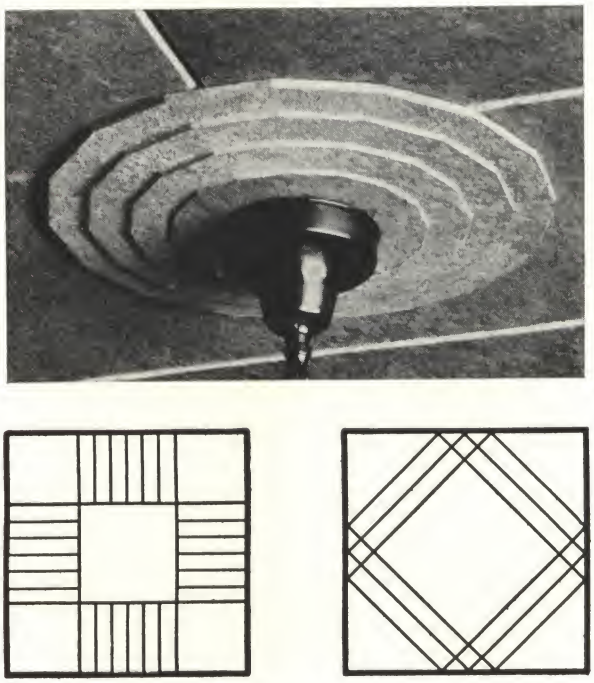


FIGURE 8

Metal moldings are especially desirable when the room is to be furnished in the modern style. They may be used to cover the joints of Nu-Wood Board in horizontal or vertical panels or to form geometric patterns on walls or ceilings. (See Figure 9.) Details of metal molds for inside and outside corners, division bars, and edge strips are shown in Figure 10. Rolled metal moldings may be obtained from Chicago Metallic Sash Company, Chicago, Illinois; Pyramid Metals Company, Chicago, Illinois; Brasco Manufacturing Company, Harvey, Illinois. Snap-on metal moldings may be obtained from Wooster Products Company, Wooster, Ohio, and others.

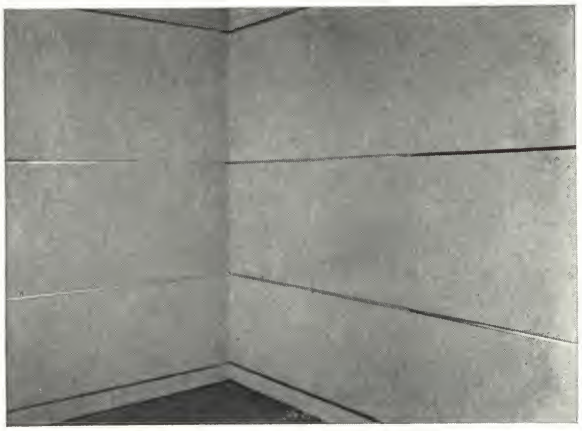


FIGURE 9

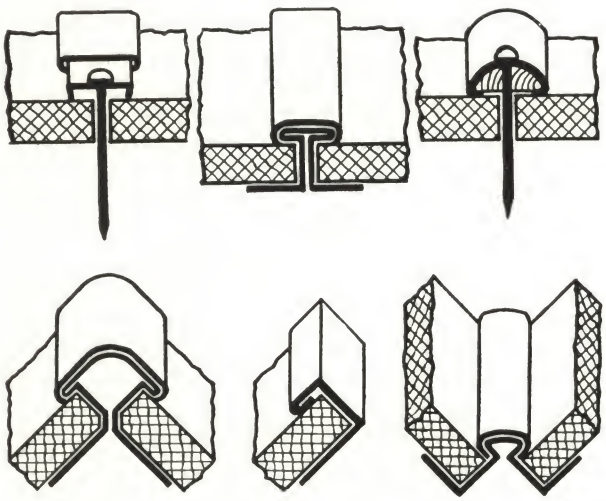
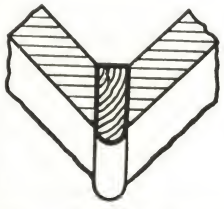


FIGURE 10



A simple outside corner treatment which may be made on the job from wood strips is illustrated.

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RIGHT AND LEFT HAND BEVEL-LAP TILE

Two edges of Nu-Wood Bevel-Lap Tile are tongued and two edges are grooved. When tile is held with long edge vertical—a *right hand* bevel tile has the tongue on the top and *right* edge. In the same position a *left hand* bevel tile has a tongue on the top and *left edge.* A square tile may be used either as a right or a left hand unit.

Nu-Wood Bevel-Lap Plank has one edge tongued and the other grooved. Ends are square cut.

DIRECTIONS FOR APPLYING NU-WOOD INTERIOR FINISH WITH ADHESIVE

A special adhesive, known as "*Adhestik*," is available for applying Nu-Wood products. All Nu-Wood dealers can supply "*Adhestik.*"

When Nu-Wood units are applied with Adhestik—use "spots" about this size.

OVER PLASTER

A. Preparation of Surface.

1. *Old construction.* The surface should be clean, free from loose dirt, grit or other impurities. Whitewash, calcimine, peeling paint or wall paper should be completely removed to insure proper adhesion between Nu-Wood and the base. Examine plaster carefully. If loose or chalky spots are found, patch as required. If surface is greasy, it must be washed clean before applying Nu-Wood with "*Adhestik.*" Plaster surfaces of rough sand finish should be scraped to remove loose particles. All low spots and other irregularities should be checked with a straight edge and these indicated by some special mark or symbol.

"*Adhestik*" COVERAGE CHART—TABLE I

Tile Size	No. Spots Per Tile	Sq. Ft. Per Gal.	Gal. Per 1000 Sq. Ft.
6 x 12	4	38	24
12 x 12	4	77	13
12 x 24	6	77	13
8 x 16	4	69	15
16 x 16	4	100	10
16 x 32	6	134	8
16 x 48	8	154	7
24 x 24	9	103	10
24 x 48	12	154	7

2. *New construction.* When new plaster forms the base for Nu-Wood, it is often feasible to omit the putty or finish coat. In this case, the brown coat must be troweled to a uniform, smooth surface and applied to give a total minimum plaster thickness of ½ in. Ample time must be given for the plaster to dry and reach its full strength before the Nu-Wood is applied. Gypsum plaster is recommended.

B. Application.

1. *Tile and Plank.* Nu-Wood Bevel-Lap Tile and Plank should be cemented to plaster with "*Adhestik*" applied around all edges in spots of sufficient size and quantity to insure proper adhesion. The size and number of spots of "*Adhestik*" will vary with the condition of plaster surface and size of tile. Large tile, such as 24 in. x 24 in., require spots of "*Adhestik*" at the center as well as around the edges. Pressure should be applied over the spots of "*Adhestik*" when sliding the tile into position. To form a good bond, the tile and plank should be worked into position with weaving or turning motion, starting one to three inches from final position. On ceiling applications where large tile are employed, use brads driven through the "*Adhestik*" spots to assist in holding the tile firmly in place until the "*Adhestik*" sets. Where irregularities in the plaster surface have been encountered and marked, apply adhesive in the proper thickness to insure a true surface.

2. *Board and Wainscot.* Nu-Wood Board and Wainscot should be fastened to plastered surfaces with both "*Adhestik*" and nails. "*Adhestik*" should be applied in spots about 1½ in. in diameter and about ¼ in. thick. These spots should be spaced about six inches apart over the entire area of each piece. The board or wainscot should then be worked into position with a sliding, weaving motion, starting one to three inches from the final location, pressing firmly over the spots of "*Adhestik.*" Whenever low spots are

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encountered in the plaster, enough "*Adhestik*" should be used to shim out the Nu-Wood. The nails should be spaced every four to six inches around the edges and every 10 to 12 inches over the remaining area. Begin nailing at the center and work toward edges. Use No. 17 gauge brads of proper length to secure anchorage, driven at an angle to the surface of approximately 60°. Nails should be countersunk to be made practically invisible.

OVER MASONRY BACKING

A. Application.

1. *Tile and Plank.* If surface is true and dry, apply Nu-Wood Tile or Plank directly to masonry with "*Adhestik,*" as specified in "Over Plaster."

2. *Board and Wainscot.* Nu-Wood Board and Wainscot should not be applied directly to masonry surface unless they can be glued and nailed. Where surface permits both, follow directions as specified in "Over Plaster."

OVER OTHER BACKINGS

1. Nu-Wood Tile and Plank may be applied to plaster-board, insulating board, plywood, or lumber. In each case the use of "*Adhestik*" or a combination of "*Adhestik*" and brads is recommended. Follow the directions outlined in "Over Wood Framing."

2. Nu-Wood Board and Wainscot may be applied to plaster-board, insulating board, plywood, or lumber. In each case, both "*Adhestik*" and nails should be used. See "Over Plaster."

NAILING RECOMMENDATIONS

Kind of Nail: Galvanized wire brads are recommended. When they are not available, bright wire brads may be used.

TABLE II

Tile Size	Location of Brad	No. of Brads Per Tile	Approx. Lbs. of Brads Per 1000 Sq. Ft. of Tile
6 x 12	1—each corner	4	6.6
12 x 12	1—each corner	4	3.3
12 x 24	4—each long edge	8	3.3
8 x 8	1—each corner	4	7.5
8 x 16	3—each long edge	6	3.7
16 x 16	3—on each side 1—in center	9	4.2
16 x 32	5—each long side 5—on center line	15	3.5
16 x 48	7—each long side 7—on center line	21	3.3
24 x 24	4—on two sides 4—on center line	12	2.5
24 x 48	7—each long side 7—on center line	21	2.2

Quantity: The quantity of brads required for use with each size unit is shown in Table II. As a general rule, board, plank and wainscot require about 6 brads per square foot, or 4 to 5 pounds of 1¼-in. brads per thousand square feet. See Table III for gauge, length and spacing of nails.

TABLE III

½" Nu-Wood Finish Material	Gauge of Nail	Length of Nail	Spacing Directions
Board	No. 17	1¼"	6"
Tile	No. 17	1¼"	6"-10"
Plank	No. 17	1¼"	6"
Wainscoat	No. 17	1¼"	6"
Moldings	No. 15	1¾"	6"

DIRECTIONS FOR APPLYING NU-WOOD INTERIOR FINISH WITH NAILS—OVER WOOD STRIPS

A. Where to install wood strips.

1. Wood furring strips should be installed over plaster surfaces in poor condition. Place strips at right angles to the framing members already installed. Wood furring strips should be used over concrete blocks, monolithic concrete, hollow tile, cinder concrete blocks, or other masonry where there is danger of moisture penetrating the wall; or where the masonry surface is uneven and, therefore, not suitable as a base. Over a masonry surface, wood nailing grounds placed not more than 36 in. on center should be inserted in the masonry joints or in the concrete surface at the time of construction. If grounds are not provided furring strips may be applied direct to hollow tile with toggle bolts and to solid masonry with plugs or expansion bolts.

B. Application.

1. *Tile and Plank.* Install wood nailing strips spaced 8 in. or 12 in. on center in accordance with the requirements of the design. Use straight lumber of uniform thickness. Shim strips to a true level plane. See "Nailing Recommendations." Nails should be driven through tile or plank at an angle to the surface of approximately 60°. Reverse the angle of half the nails. Nail through face of tile or plank—never through bead or bevel. Bury nail heads below surface with properly gauged hammer blow or with nail set.

2. *Board and Wainscot.* Install wood nailing strips spaced 12 in. or 16 in. o.c. If these strips are applied vertically, insert cross furring back of chair rail and baseboard and at intervals between the chair rail and baseboard not over 24 in. on center. If applied horizontally,

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insert cross furring at joints and at intervals not over 24 in. o.c. Nails shall be driven at an angle to the surface of approximately 60°. Reverse the angle of half the nails. Nail through face of board or wainscot—never through bead or bevel. Bury nail heads below surface with properly gauged hammer blow or nail set.

OVER WOOD FRAMING

1. *Tile and Plank.* In new construction apply Nu-Wood Board, plasterboard, plywood, Tuffwood, Semi-tuffwood, or lumber as backing before applying tile or plank. When lumber, plywood, plasterboard, or Semi-tuffwood backing is used, tile or plank may be nailed or glued. With Nu-Wood or Tuffwood backing "*Adhestik*" is recommended. See directions for applying with "*Adhestik*," "Over Plaster," directions for applying with nails, "Over Wood Strips."

2. *Board and Wainscot.* Nu-Wood Board and Wainscot may be nailed directly to framing members spaced 12 in. or 16 in. on center. Insert headers back of chair rail and baseboard and at intervals between the chair rail and baseboard not over 24 in. on center. Follow directions in "Over Wood Strips."

HOW NU-WOOD IS CLEANED

Remove dust from Nu-Wood walls and ceilings with a vacuum cleaner—grime and dirt with a rubber cleaning sponge (used dry) or wall paper cleaner.

HOW NU-WOOD MAY BE DECORATED

Nu-Wood is especially sized in manufacture to provide a suitable painting surface for water paints. When the entire surface is to be covered with oil paint, however, a suitable primer (which is made by most paint companies) should be applied first. Check your local paint dealer for correct primer. Stencils may be obtained from paint stores or from the "Ladies' Home Journal," Philadelphia, Pennsylvania.

TYPICAL NU-WOOD INSTALLATIONS

IN THE HOME

IN THE SCHOOL

IN THE CHURCH

IN THE THEATRE

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NU-WOOD *Insulating Lath* APPLICATION INFORMATION

DESCRIPTION

Nu-Wood Insulating Lath is a rigid wood fiber plaster base with a high degree of insulating efficiency.

JOINT

Nu-Wood Lath has a simple V joint which makes fitting of sheets in application easy, reduces joint damages and assures a continuous, unbroken plastering surface.

BOND WITH PLASTER

Nu-Wood Lath offers a natural bond with plaster several times greater than that of wood lath. The strong wood fibers grip the plaster to enable it to withstand a pull of more than 1500 lbs. to the square foot. Loose plaster, lath marks, and plaster cracks are almost entirely eliminated.

INSULATION EFFICIENCY

Nu-Wood Lath has a conductivity rating of .324 B.t.u. per hour, per square foot, per degree difference in surface temperature according to Prof. J. C. Peebles of Armour Institute of Technology.

SIZES OF NU-WOOD LATH

Nu-Wood Lath is furnished 16 in. wide and 48 in. long—convenient, easy-to-handle units which are packed in bundles to simplify delivery.

Nu-Wood Lath is available ½ in. thick, 1 in. thick or greater thicknesses in multiples of ½ in. as desired. There are 12 pieces of ½ in. to the bundle—64 sq. ft. There are 6 pieces of 1 in. to the bundle—32 sq. ft.

APPLICATION OF NU-WOOD INSULATING LATH

General—Do not moisten lath units before application. Apply lath at right angles to the framing (or furring) members with rough side exposed and V joint "tongue" up. End joints shall center over framing members. Stagger end joints in successive courses. Stagger end joints at juncture of wall and ceiling.

Where cutting is necessary, the lath shall be scored with the point of the lather's hatchet and broken along the scored line.

Where piecing out is necessary, use only strips of Nu-Wood Lath so cut that the V joint between units shall span between supports.

Accurately cut and fit lath around electrical outlet boxes, piping, etc.

Spacing—Space ends of lath units $\frac{3}{16}$ in. apart. Bring V joint edges together in moderate contact.

Nails—Use No. 13 gauge, $1\frac{1}{8}$ in. long, blued special plasterboard nails with $\frac{5}{16}$ in. heads for ½ in. thick Nu-Wood Lath.

Use No. 13 gauge, $1\frac{3}{4}$ in. long, blues special plasterboard nails with $\frac{5}{16}$ in. head for 1 in. thick Nu-Wood Lath.

Nailing—First nail units to intermediate supports, then nail ends. Space nails approximately 4 in. apart and not closer than $\frac{3}{8}$ in. to edges.

Angle Reinforcement—All corners shall be reinforced with standard metal corner beads. All re-entrant angles shall be reinforced with standard expanded metal angle lath strips (cornerite). Reinforcement shall be securely stapled over the Nu-Wood Lath.

RELATED PROVISIONS

Construction framing shall be 12 or 16 in. on centers. Follow the standard recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association for all wood framing.

Furring—Fur all exterior masonry walls to receive Nu-Wood Lath with 1 x 2 furring strips set 12 or 16 in. o.c. accurately shimmed to a true, level plane. Secure substantially to masonry.

Grounds—Furnish and erect, substantially secured to framing members through the Nu-Wood Lath, full ½ in. wood grounds for all interior wood trim.

Where 1 in. thick Nu-Wood Lath units are used, add the necessary trim grounds on all door and window frames to compensate for this thickness plus a full ½ in. of plaster.

Plastering—Caution—Do not wet Nu-Wood Lath before applying plaster.

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Inspection—Inspect nailing and notify lather of any portions of Nu-Wood Lath not adequately secured in accordance with "Application" as outlined above. See that all corners and angles are reinforced with metal corner beads accurately set to line with grounds and that all re-entrant angles are reinforced with expanded metal angle strips.

Plaster—Use standard gypsum cement plaster or gypsum wood fiber plaster for scratch and brown coats mixed accurately in accordance with the manufacturer's specifications. Both scratch and brown coat shall be mixed to a wet consistency to allow for application with light trowel pressure and to facilitate darbying. Use any standard plaster finish over the brown coat, such as gypsum, lime, or lime gauged with gypsum mixed in accordance with the manufacturer's specifications. *Note: Lime plaster or lime gauged with gypsum should not be used for scratch and brown coats.*

APPLICATION OF PLASTER

Apply in three (3) coats to full ½ in. grounds in accordance with the plaster manufacturer's specification. Surfaces shall be rodded to a true plane. All corners and angles shall be plumb and true. Wherever necessary, and particularly on ceilings, provide plaster screeds to insure an even, uniform full ½ in. plaster thickness. *Note: The maintenance of a uniform full ½ in. thickness of plaster cannot be too strongly stressed. Most plaster defects where a fibrous or board plaster base is used may be attributed to a weak, thin plaster coat, inadequate to withstand the normal building strains of shrinkage, settlement, and vibration.*

In applying the scratch coat of plaster, this shall be carefully pressed into all joints.

If the brown coat becomes stiff and sets during darbying, wet down the surface to allow for darbying without undue pressure against the plaster surface.

Darby strokes shall be in the direction of framing members with the darby spanning two studs or joists.

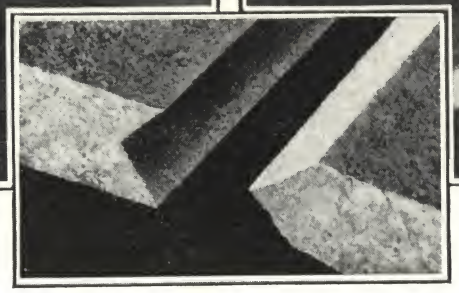
Ventilation—Provide adequate ventilation for the proper drying of the plaster. *Note: Due to the moisture-proof characteristics of Nu-Wood Lath, all plaster moisture must be carried off by the air in contact with the exposed plaster surface.*

Heat—Provide adequate heat to prevent injury by frost.

Electrical Outlets—Where 1 in. thick Nu-Wood Lath units are used, set electrical outlet boxes to accommodate a full 1½ in. thickness from face of stud or joist to face of plaster.

APPLICATION OF NU-WOOD LATH

APPLICATION OF PLASTER OVER NU-WOOD LATH



THE NU-WOOD LATH JOINT

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NU-WOOD *Roof Insulation* APPLICATION INFORMATION

GENERAL—*Roof insulation to be effective must be kept dry before, during, and after installation. To facilitate this axiom of good construction and enable the roofing contractor to do better and more rapid work, the inclusion, in the specifications of Vapor Cut-offs, Seal Courses, and Water Cut-offs is strongly recommended. These provisions are approved for standard practice by the United Roofing Contractor's Association.*

VAPOR CUT-OFF—is used over wood roof decks where high humidities are maintained within the building. It consists of a multiple layer of roofing felts or a course of heavy prepared roofing laid directly over the wood deck. Insulation is laid over this waterproof course and covered with the waterproof built-up roofing.

SEAL COURSE—is used over concrete and similar roof decks to act as a temporary waterproof covering. This is applied as soon as the roof is completed and obviates any necessity for installing the insulation and finished roofing during inclement weather or before other trades have left the roof. It provides adequate protection for the completion, without delay, of work within the building, such as plastering and interior finish.

WATER CUT-OFFS—divide the insulation into isolated areas to prevent spread of leaks should the finished roofing be damaged. They provide against damage by sudden showers and form logical damage-proof stopping points during the roofing installation over-night and week-ends.

Location of water cut-offs should be indicated on the roof plan with faint lines to assist roofing contractor and to serve as a permanent record.

WOOD NAILING GROUNDS—Roof Insulation is not a nailing base. Provide under "carpentry work" for the installation of wood grounds to form a permanent, rigid nailing base for all sheet metal work. These grounds should be the full thickness of the insulation and should be at least 1 in. wider than the apron of the flashing.

NUMBER OF INSULATION LAYERS—For the best results, the insulation should be laid in two (2) layers, the second breaking joints with the first.

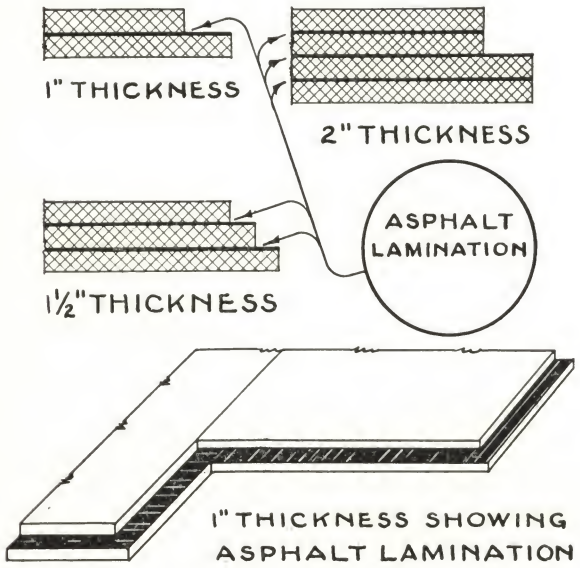
FELTS AND BITUMENS—Where coal tar pitch is used, all felts should be impregnated with the same material. Where asphalt is used, use asphalt impregnated felts.

1. *Application Over Wood Roof Decks Under Built-up Roofing*

PREPARATION OF DECK

Wood Nailing Grounds—To provide adequate attachment for miscellaneous sheet metal flashings, such as leader outlets, soil and vent flashings, metal base flashings, eave aprons, gravel stops, etc.

Provide wood nailing grounds to form a nailing base under all sheet metal flashing aprons and flanges of every nature. Grounds shall be the full thickness of the Nu-Wood Roof Insulation at least 1 in. wider than the apron and rigidly secured to the roof construction with nails, lag bolts, expansion bolts, or other means of attachment as best adapted. Check all nailing grounds and correct defects before laying Nu-Wood Roof Insulation and roofing.



DETAIL OF NU-WOOD ASPHALT LAMINATED ROOF INSULATION

Roof Deck—Broom clean surface of roof deck. Make free from dirt and loose material; get thoroughly dry. Nail all loose or springy boards before insulation is laid.

Building Paper—If Nu-Wood Roof Insulation is laid in one (1) layer only cover the entire roof area with two (2) plies (lapped half) rosin sized building paper or 6 lb. coated felt. Nail sufficiently to hold in place until the Nu-Wood Roof Insulation is laid over it.

WOOD CONVERSION COMPANY
ST. PAUL MINNESOTA
DISTRICT OFFICES:
NEW YORK, N. Y. 155 E. 44TH ST.
CHICAGO, ILL. 360 NO. MICHIGAN AVE.

Makers of
BALSAM WOOL *and* **NU-WOOD**

APPLICATION OF NU-WOOD ROOF INSULATION

Only as much Nu-Wood Roof Insulation shall be laid over the roof area as can be covered by the finished roofing in any one day.

Lay Nu-Wood Roof Insulation in one or two layers over the entire roof area. Adjoining edges of the boards shall be brought to a moderate contact but shall not be forced into place. Where the roof meets vertical surfaces, such as parapets, penthouses, etc., boards shall be cut in a neat, workmanlike manner to insure proper joining without forcing. Boards shall be laid in parallel courses with end joints in each course breaking with those of adjoining courses.

Two Layer Insulation—Where Nu-Wood Roof Insulation is laid in two (2) layers, the boards of the second layer shall be laid parallel with those of the first layer, and the joints of the second layer shall break joints with those of the first layer.

Nailing of two (2) layer Nu-Wood Roof Insulation shall be through the second layer or top layer only. (Do not nail the first layer.)

Water Cut-offs—Note: Advocated to prevent the spread of water beyond predetermined isolated areas in the event of leaks due to damage to the roofing or defective flashings, parapet walls, copings, etc.

Nu-Wood Roof Insulation, whether laid in one (1) or two (2) layers, shall be cut to the line designated for the water cut-off.

Water cut-offs shall consist of strips of coal tar pitch or asphalt saturated roofing felt 8 to 10 in. wide stuck in bitumen to the roof, carried over the edge of the Nu-Wood Roof Insulation, and turned over and stuck in bitumen to the top surface of the insulation. Water cut-offs shall be located approximately 24 in. from and parallel to all vertical walls, such as parapets, penthouses, skylight curbs, etc., and around all leader heads, soil pipes, vents, ventilators, etc. The body or field of the roof shall be divided into rectangular areas approximately 30 ft. on a side, each area isolated with a water cut-off. Insert a water cut-off surrounding each day's work if the stop is not made at the designated water cut-off. At least one (1) ply of the finished roofing shall be mopped to the water cut-off each night.

Nails—Nails shall be of sufficient length to pass through the insulation and penetrate the wood roof deck at least 1 in.

Nailing—Space nails 12 in. apart o.c. Each board shall be secured in place by nailing along each edge and with nails staggered along the longitudinal center line.

APPLICATION OF ROOFING

The exposed surface of the Nu-Wood Roof Insulation shall receive a poured coat of hot coal tar pitch or asphalt squeegeed or broomed to about 1/16 in. thickness to receive the roofing felts. *Note: The above in lieu of the ordinary mopping is advocated. Roofing shall be applied in accordance with the manufacturer's specifications.*

PREPARATION OF DECK

All preparation shall be as in "Application Over Wood Roof Decks under Built-up Roofing."

2. *Application Over Wood Roof Decks Under Built-up Roofing Where High Humidities are Maintained*

Vapor Cut-off—Over the wood roof deck lay two (2) plies (lapped half) of 14 lb. coal tar pitch saturated felt or 34 lb. asphalt prepared roofing having one side coated. (Lay coated side down.) Nail the back edge of each sheet with tin-capped, galvanized, barbed roofing nails spaced 12 in. o.c. All laps shall be mopped back 12 in. with hot coal tar pitch or asphalt. Do not mop over this membrane until just prior to the laying of Nu-Wood Roof Insulation.

APPLICATION OF NU-WOOD ROOF INSULATION

Mopping the Vapor Cut-off—Mop the exposed vapor cut-off felt liberally with hot coal tar pitch or asphalt. Only sufficient area to provide complete embedment of each Nu-Wood Rood Insulation unit shall be mopped at a time.

Follow application instructions as outlined under "Application Over Wood Roof Decks Under Built-up Roofs."

Two-Layer Insulation—Where Nu-Wood Roof Insulation is laid in two (2) layers, the units of the second layer shall be laid parallel with those of the first layer, and the joints of the second layer shall break joints with those of the first layer.

Mop the exposed surface of the first layer liberally (at least 25 lbs. per square) with hot coal tar pitch or asphalt. Only sufficient area to provide complete embedment of each insulation unit shall be mopped at a time.

Embed each unit of the second layer firmly in the bituminous mopping.

Water Cut-offs—Follow "Water Cut-offs" as outlined under "Application Over Wood Roof Decks Under Built-up Roofs."

APPLICATION OF ROOFING

Follow application instructions as outlined under "Application of Roofing" under "Application Over Wood Roof Decks Under Built-up Roofing."

3. *Application Over Roof Decks of Monolithic Concrete or Gypsum or Roof Decks of Unit Tile Construction Under Built-up Roofing or Promenade Tile*

PREPARATION OF SURFACE

Follow instructions under this title Application I for Wood Nailing grounds EXCEPT when finished roofing is to be Promenade Tile.

ROOF DECK

General—The surface of the roof deck shall be reasonably smooth without depressions, broomed clean, free from dirt and loose material and thoroughly dry.

Unit Tile Construction—The joints of all tiles—cement, gypsum, or similar—shall be properly pointed up.

WOOD CONVERSION COMPANY
ST. PAUL MINNESOTA
DISTRICT OFFICES:
NEW YORK, N. Y. 155 E. 44TH ST.

Makers of
BALSAM WOOL *and* **NU-WOOD**

CHICAGO, ILL. 360 NO. MICHIGAN AVE.

Under Promenade Tile Roofing—Note: Slope for proper drainage may be provided in either of the two following methods: The first is preferable.

The roof slab shall be formed flat and the drainage slopes built up over the Nu-Wood Roof Insulation with the finished promenade tile roofing and its mortar bed . . . OR . . . the roof slab shall be formed graded to all outlets with cement mortar fill before the seal course and the Nu-Wood Roof Insulation is laid.

SEAL COURSE—*is recommended on all insulated roof decks, other than wood, to afford protection from rain, snow, and ice so that the insulation and finished roofing may be applied under favorable weather conditions and only after all other trades have left the roof.*

Priming the Deck—Prime the deck with asphalt roofing primer. *Note: Include priming if asphalt mopping and asphalt felt are used for seal course. If coal tar pitch and felt are used, no primer is necessary.*

Mopping the Deck—Mop the entire roof area or spot or strip mop the individual tiles or units with a coat of hot coal tar pitch or asphalt. *Note: If the deck is monolithic construction (concrete, poured gypsum), the mopping shall be continuous. If the deck is of precast units (book tile, precast gypsum, concrete), spot or strip mop the individual units.*

Laying the Seal Course—Over the mopping while hot, lay one (1) layer of 14 lb. coal tar pitch or asphalt saturated roofing felt with 2 in. laps. Turn the felt up 4 in. against all walls and vertical surfaces and stick with pitch and provide temporary thimbles at all leader heads, etc., so that the roof will be reasonably watertight against rain and melting snow. Do not mop over this membrance until just prior to the laying of Nu-Wood Roof Insulation.

APPLICATION OF NU-WOOD ROOF INSULATION

Mopping the Seal Course—Mop the exposed seal course felt liberally with hot coal tar pitch or asphalt. Only sufficient area to provide complete embedment of each Nu-Wood Roof Insulation unit shall be mopped at a time.

Follow "Application of Nu-Wood Roof Insulation" under "Over Wood Roof Decks under Built-up Roofing."

Two-Layer Insulation—Where Nu-Wood Roof Insulation is laid in two (2) layers, the boards of the second layer shall be laid parallel with those of the first layer, and the joints of the second layer shall break joints with those of the first layer.

Mop the exposed surface of the first layer liberally (at least 25 lbs. per square) with hot coal tar pitch or asphalt. Only sufficient area to provide complete embedment of each Nu-Wood Roof Insulation unit shall be mopped at a time.

Embed each unit of the second layer firmly in the bituminous mopping.

Water Cut-offs—Follow application of Water Cut-offs under Application I.

APPLICATION OF ROOFING

Follow application instructions as outlined under "Application of Roofing" under "Over Wood Roof Decks Under Built-up Roofing."

PREPARATION OF SURFACE

Follow instructions under this title Application I for Wood Nailing Grounds.

Roof Deck—The steel deck shall be securely anchored to the roof purlins and all joints shall be made rigid.

4. *Application Over Steel Roof Decks Under Built-up Roofing*

Seal Course—Note: Include this seal course if the rooms beneath the roof carry high manufactured or incidental humidities. Do not use coal tar pitch mopping on steel decks.

Laying the Seal Course—Mop the entire roof area with a coat of hot asphalt. Over the mopping, while hot, lay one (1) layer of 14 lb. asphalt saturated roofing felt with 2 in. laps. Turn the felt up 4 in. against all walls and vertical surfaces and stick with pitch and provide temporary thimbles at all leader heads, etc., to the end that the roof will be reasonably watertight against rain and melting snow. Do not mop over this membrane until just prior to the laying of Nu-Wood Roof Insulation.

APPLICATION OF NU-WOOD ROOF INSULATION

Mopping the Seal Course or the Steel Deck—Mop the exposed seal course felt or the steel deck with hot asphalt. Only sufficient area to provide complete embedment of each Nu-Wood Roof Insulation unit shall be mopped at a time.

Follow "Application of Nu-Wood Roof Insulation" under "Over Wood Roof Decks Under Built-up Roofing."

Two-Layer Insulation—Where Nu-Wood Roof Insulation is laid in two (2) layers, the boards of the second layer shall be laid parallel with those of the first layer, and the joints of the second layer shall break joints with those of the first layer.

Mop the exposed surface of the first layer liberally (at least 25 lbs. per square) with hot asphalt. Only sufficient area to provide complete embedment of each Nu-Wood Roof Insulation unit shall be mopped at a time.

Embed each unit of the second layer firmly in the bituminous mopping.

For Steel Decks—In addition to the mopping, each board shall be secured to the steel deck with three (3) bolts along the top.

Water Cut-offs—Follow application of Water Cut-offs under Application 1.

APPLICATION OF ROOFING

Follow application instructions as outlined under "Application of Roofing" under "Over Wood Roof Decks Under Built-up Roofing."

SIZES—THICKNESSES

The size of Nu-Wood Roof Insulation is 24 x 48 in. or 23 x 47 in. It is available ½ in. and 1 in. thick and will be furnished in any other practical thickness desired. For thickness of 1 in. or greater, multiples of ½ in. Nu-Wood Roof Insulation are either stapled or asphalt-laminated, with offset or flush edges as desired, to required thickness.

Asphalt-laminated Nu-Wood Roof Insulation provides to the job all the advantages occurring when layers of insulation are thoroughly mopped as they are applied—yet it is applied in one operation, reducing labor costs and insuring complete moisture-resistance.

There are ten sheets of ½ in. Nu-Wood Roof Insulation to the bundle . . . five sheets of 1 in.

Nu-Wood Roof Insulation is also available in wrapped and sealed units—24 x 48 in. or 23 x 47 in. in thickness of 1 in., 1½ in., 2 in., or additional thicknesses in multiples of ½ in. as desired. This wrapped and sealed Nu-Wood Roof Insulation is moisture, water and vapor-proof.

BALSAM-WOOL
NU-WOOD

WEYERHAEUSER
FOREST PRODUCTS

WOOD CONVERSION COMPANY
ST. PAUL · · · MINNESOTA

CALIFORNIA STUCCO PRODUCTS COMPANY

169 Waverly Street
CAMBRIDGE, MASS.

122 East 42nd Street
NEW YORK, N. Y.

Acoustical Plasters
STUCOUSTIC, TYPE A.D.
and
STUCOUSTIC, TYPE A.C.F.

Other Products
Exterior Cement Stucco, Interior Colored Plasters, Caenstone, Travertine, Colored Floor Finish.

STUCOUSTIC (TYPE A.D.)—AN ACOUSTICAL PLASTER

For Economical Sound Absorption and Sound Control

Low Cost—Integral Colors—Architectural Adaptability

Description

Stucoustic was developed to obtain an acoustical plaster that the skilled artisan could readily apply, that would be economical to the owner, and truly permanent, and that would fit accurately into the design of the architect and the acoustical expert. It is unique among acoustical plasters.

Stucoustic can be finished with a steel trowel to a smooth, sanitary, high light-reflecting surface without impairing its remarkable sound-absorbing capacity. It can be furnished white or colored to any desired shade.

With this finish, all particles of aggregate are completely embedded in the body of the plaster, the surface is comparatively smooth, sanitary, high light reflective. It requires less paint for re-decoration and therefore, painting does not appreciably reduce the sound-absorption. Stucoustic can also be floated, stippled, textured, antiqued, or finished in other ways as desired.

All Souls Church, New York, N. Y.
Stucoustic ceilings and walls
HOBART UPJOHN, Architect

Application and Painting

Application—Regular plasterers apply Stucoustic. It is mixed to the consistency of ordinary mortar and applied to a brown coat of gypsum, portland cement, or lime plaster. One plasterer will normally apply from 8 to 10 sq. yds. of ½-in. Stucoustic per hour.

Painting—Water-mixed paints, sprayed on, are recommended. Test data of Stucoustic spray painted with five coats of water mixed paint shows a reduction of 2% of sound absorption. Painting instructions furnished on request.

Specifications for Stucoustic, Type A.D. Acoustical Plaster

"Areas to receive acoustical plaster shall be given a scratch and brown coat in the ordinary manner. The surface of the brown coat shall be scored or cross scratched for bond and allowed to dry thoroughly before the application of the acoustical plaster."

Note: Where Stucoustic is subjected to high humidity or periodic wetting, no gypsum shall be used in base coats. Use plaster base coats consisting of equal parts by weight of portland cement and hydrated lime and two parts of sand.

Note: Where Stucoustic is applied directly to metal lath, use ⅛ in. rib lath weighing not less than 2.75 lbs. or equal, apply Stucoustic scratch coat the same as ordinary gypsum scratch and allow it to dry thoroughly.

"Stucoustic Plaster shall be applied to the dry base coat without sprinkling or otherwise reducing the suction in coats, about ¼-in. thick, to a total thickness of Stucoustic of ½-in. (or ¾-in. as desired). The surface shall be finished as directed by the architect and all mixing and application of Stucoustic shall be done in accordance with the instructions of the CALIFORNIA STUCCO PRODUCTS COMPANY and under the direction of their representative."

SOUND ABSORPTION TEST DATA

Results of tests made by Bureau of Standards as listed below. All samples were applied to gypsum base coat plaster and steel trowel finished.

Stucoustic Type	Thickness, in.	Coefficient of Sound Absorption				
		128	256	512	1024	2048
A.D.	½	.14	.16	.49	.59	.61
A.D.	¾	.18	.36	.65	.65	.62
A.C.F.	⅞	.17	.35	.76	.78	.71

A Few Stucoustic Jobs and Their Architects

First National Bank of New York, New York; *Walker & Gillette*
Harvard Club, Boston; *William T. Aldrich*
Union Club, New York; *Delano & Aldrich*
Trumbull College, Yale University; *James Gamble Rogers*
Christian Science Pub. House, Boston; *Chester Lindsey Churchill*
White House, Washington, D. C.; *Eric Gugler*
Harvard Congregational Church, Brookline; *Allen & Collins*
Academy of Medicine, New York; *York & Sawyer*
Melrose High School, Melrose, Mass.; *J. Wm. Beal & Sons*

Service

Our Service Department will supply complete specifications on request, and a supervisor will be sent to each job to advise as to the proper installation of Stucoustic Acoustical Plaster and preparation of the base coat.

ATLANTIC GYPSUM PRODUCTS COMPANY

ACOUSTICAL DIVISION

Manufacturers and Distributors of Acoustical and Insulation Products

205 East 42nd Street
NEW YORK, N. Y.

40 Central Street
BOSTON, MASS.

For Rockwall Plasters, Lath and Wall Board, see File Index

Quiet **ACOUSTEX** *Please*

THE DECORATIVE SOUND ABSORBENT

Composition

Acoustex is a cement and wood fiber composition formed into a strong, rigid, acoustical tile, with exceptional sound absorbing qualities.

Use

Acoustex is used in either old or new buildings to correct acoustical faults which make hearing difficult or to reduce noise in rooms where quiet is desirable.

Sizes

Acoustex is furnished in tile or sheet form. Standard tile are 6x12, 12x12, 18x18 and 12x24 in. Sheets are 2 ft. wide and up to 8 ft. in length. All tile and sheets have beveled edges.

Thickness

Acoustex is made in thicknesses to meet absorption requirements.

Acoustex Type 40-R — ¾ in.
Acoustex Type 60-R —1 in.
Acoustex Type 70-R —1¼ in.
Acoustex Type 80-W—1¼ in.
Acoustex Type 90-W—1½ in.
Acoustex Type 100-W—2 in.

Type R materials are solid tiles made entirely of the cement and wood fiber composition.

Type W materials are made of a solid Acoustex facing; specially built backs filled with rockwool. These types are light in weight and possess high sound absorbing values.

Decoration

Acoustex can be supplied either decorated or undecorated. It comes predecorated in five standard colors. Variations from standard colors can be furnished on request.

Maintenance

Acoustex can be cleaned with either a brush or a vacuum cleaner. It can be redecorated many times without loss of absorbing value by spray painting. It can also be brush painted using thinned flat wall or water paints.

ABSORPTION VALUE

Type	Frequencies						
	128	256	512	1024	2048	ND*	Auth†
40-R — ¾ in. on plaster	.14	.20	.43	.66	.81	.55	A.M.A.
60-R —1 in. on plaster	.13	.32	.52	.84	.70	.60	A.M.A.
60-R —1 in. on furring	.21	.39	.64	.88	.79	.70	A.M.A.
70-R —1¼ in. on plaster	.14	.32	.69	.93	.78	.70	A.M.A.
80-W—1¼ in. on plaster	.12	.44	.79	.94	.92	.75	A.M.A.
100-W—2 in. on plaster	.33	.76	.83	.88	.87	.95	A.M.A.

*N. D.—Noise reduction coefficient—recommended for use in considering acoustical materials for noise quieting purposes as in offices, hospitals, banks, corridors, etc.

†Auth.—All absorption values taken from Acoustical Materials Association Official Bulletin No. 111—July, 1935.

Fireproof

Acoustex is fireproof. Because the bulk of its composition is cement, it has no fire hazard. Numerous fire tests have been made which prove that Acoustex does not spread flame.

Special Construction

Acoustex may be installed by means of special construction using metal runners as carrying members attached to channels installed by others. This construction gives a strong, rigid Acoustex finish, usually in large units, omits lath and plaster and gives high absorption values. Details will be furnished on request.

Installation

The manufacture and installation of Acoustex is controlled by ATLANTIC GYPSUM PRODUCTS COMPANY or its authorized erectors.

Specification

Where acoustical treatment is indicated on the plans, listed in the schedules or called for in the specifications, it shall be Acoustex Type (designate type desired) as manufactured by ATLANTIC GYPSUM PRODUCTS COMPANY and shall be applied by their certified contractors in accordance with detailed specifications.

ROCKWALL ACOUSTICAL PLASTER

Rockwall Acoustical Plaster is a gypsum base material so formulated as to meet all standards of easy mixing and application and give the maximum of sound absorption. It is packed in 50 lb. paper bags.

Appearance

Rockwall Acoustical Plaster has an appearance similar to a sand finish plaster, when finished with a float. It can also be finished with a steel trowel.

Color

This plaster is furnished in either the gray white natural finish or in attractive tints of light buff and dark blue.

Covering Capacity

Applied in two ¼-in. coats to a thickness of ½ in. in accordance with directions, it will cover approximately 115 sq. yd. to the ton.

Rockwall Acoustical Plaster has the following absorption coefficients as reported by the Official Laboratories of the Acoustical Materials Association

ABSORPTION

	128	256	512	1024	2048	N.D.
½ in. thick.....	.27	.28	.40	.67	.64	.50

Application

Rockwall Acoustical Plaster should be applied over a base coat of gypsum plaster that has been well scratched and is dry. It is applied in two ¼-in. coats to a thickness of ½ in. under the supervision of a representative of the ATLANTIC GYPSUM PRODUCTS COMPANY. The first coat should be allowed to draw for at least two hours before the second coat is applied. The second coat should be allowed to draw about 30 minutes before it is finished with either a float or trowel.

Decoration

Rockwall Acoustical Plaster may be spray painted. Recommendations for proper materials to be used will be given upon request. It may also be decorated with AAT—Acoustical Finish described below.

AAT—THE ACOUSTICAL FINISH

This is a decorative acoustical finish especially designed for decoration or redecoration of Rockwall Acoustical Plaster or of any other acoustical plaster similar to Rockwall Acoustical Plaster, without destroying the absorption.

Application

AAT is supplied in 50-lb. bags. It requires the addition of water only for mixing. It is applied by either a brush or a trowel in a thickness sufficient to cover the old surface. It is recommended that it be applied in about ⅛-in. thickness. It will cover about one yard to the pound.

Color

AAT is supplied in a natural white color. It may be tinted to any desired shade.

Effect on Absorption

Results of tests on ½-in. of Acoustical Plaster before and after a coat of AAT has been applied:

Rockwall	140	250	500	1000	2000	4000
½ in. thick before.....	19	29	39	60	66	59
½ in. thick after.....	17	27	40	53	53	56

Tests made on the same panel by Electrical Research Products, Inc.

ROCKWALL INSULATING BOARD

Rockwall Insulating Board is a felted wood fiber product that has been treated to make it highly moisture resistant.

Conductivity—The average established in tests is .34 B.t.u.'s per hour per sq. ft. per inch thickness, per degree Fahrenheit.

Sizes

It is available in ½, ¾ and 1 in. thick—4 ft. wide, and 4, 5, 6, 7, 8, 8½, 9, 9½, 10 and 12 ft. long.

Appearance

Rockwall's attractive cream colored surface can be left unfinished or take any type of decoration easily.

ROCKWALL INSULATING LATH

Rockwall Insulating Lath is used as a base for gypsum, sanded or wood fiber plaster; ½, ¾ and 1 in. thick; 18 in. wide and 48 in. long. The long sides are tongue-and-grooved and beveled.

Application

Do not moisten lath before application. Apply lath with the length at right angles to the framing members. End joints to center over framing members. Stagger end joints on all walls and ceilings and likewise at juncture of walls and ceilings. Joints brought tight and spaced ¼ in. apart at ends. Use 4d common, blued or box nails, for ½ in., 6d for ¾ and 1 in.

CERTAIN-TEED PRODUCTS CORPORATION

Manufacturers of Sound Absorbing Plaster

GENERAL OFFICES
100 East 42nd Street, NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster Pages
For Our Other Products, see File Index

KALITE SOUND ABSORBING PLASTERS

For Plain and Ornamental Acoustical Plaster Treatments

Giving the Effect of a Natural Stone

Kalite Sound Absorbing Acoustic Plaster

Kalite Acoustical Plaster has the basic properties that adapt it to the requirements of modern construction. Kalite is a highly cellular plaster that absorbs sound. It is made of carefully graded and sized pumice of a special variety, mixed with calcined gypsum and other ingredients which are chemically inert. When the plaster sets, there are minute air spaces around the pumice particles. Through the body of the plaster, these small air spaces intercommunicate either directly or through the porous structure of the pumice and produce those sound absorbing qualities necessary in a good acoustical material.

On the job, Kalite is mixed with water only and is then ready for application. Kalite mortar weighs approximately one-half as much as ordinary sanded gypsum plaster mortar, and furnishes a smooth, hard finish under the trowel.

Interior of Court Room No. 1, Post Office and Courthouse Building, Columbus, Ohio

HENRY ERICSSON COMPANY, General Contractors, Chicago, Ill.
RICHARDS, MCCARTHY & BULFORD, Architects, Columbus, Ohio

Two Types of Kalite Plaster

Two types of Kalite Plaster are offered as follows:

KALITE "H" PLASTER—Made of a pumice aggregate with a gypsum binder, available in either natural gray or buff.

Kalite "H" sound absorbing plaster, while furnished in natural gray or buff, may be finished in other colors by the use of Certain-teed Non-bridging Lacquers applied with standard spraying apparatus. Specifications for decorations are available upon application at any Sales Office of the CERTAIN-TEED PRODUCTS CORPORATION.

KALITE HYDRAULIC PLASTER—Made of a pumice aggregate with portland cement binder, suitable for sound correction purposes where physical conditions require damp-proof construction, such as the walls and ceilings of steam kitchens, swimming pools, etc. Color natural portland cement.

Above: Entire Coffer Ceiling, Cornice and Frieze as well as the Wall Treatment of Fluted Pilasters and Ashlar Panels are of pre-cast Kalite Sound Absorbing Cast Acoustic. Note sharp arrises and details of ornamental work. The acoustics of the Courtroom were tested by the U. S. Bureau of Standards after completion of the installation of Kalite and accepted as satisfactory.

Absorption Coefficients of Kalite "A" Plasters As Measured by U. S. Bureau of Standards Under Date of Oct. 16, 1935

Kalite Thickness	Frequency 128	256	512	1024	2048	4096	Noise Coefficient
½-in. trowel finish	.36	.33	.46	.70	.66	.68	.55
¾-in. trowel finish	.43	.38	.63	.78	.65	.70	.60

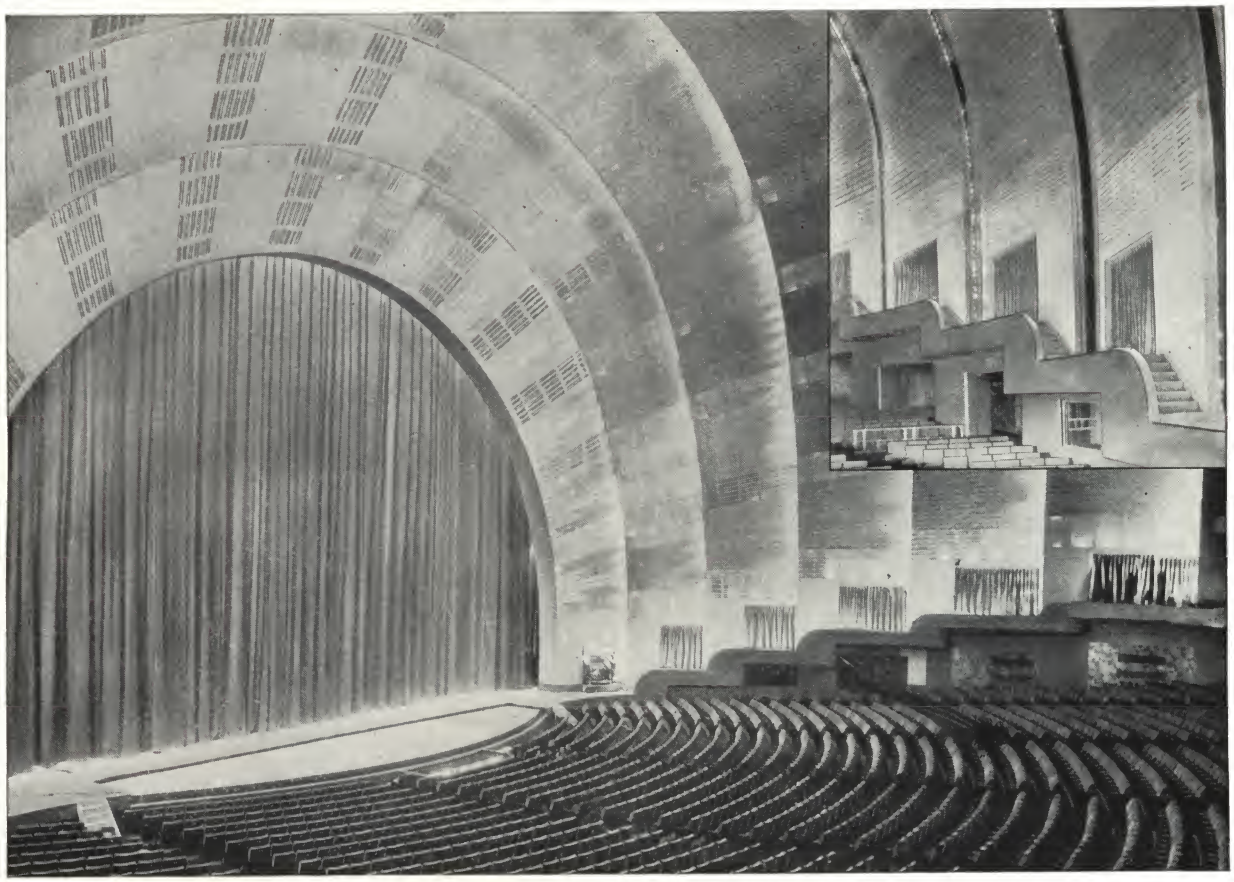
The above are results of tests for sound absorption as measured on Kalite "H" panels constructed of 1½-in. angle iron carrying bars spaced 3 ft. 10 in. on centers, 1-in. furring channels spaced 12 in. on centers, 3.4-lb. expanded metal lath with standard thickness of scratch and brown coats of gypsum hardwall plaster. In the application of both above tests Kalite was applied in what is called "one coat doubled up". The doubled up coat applied after the scratch-in coat had taken up—after about one hour lapse of time.

Absorption Coefficients of Kalite Hydraulic Plaster As Measured by Vern O. Knudsen, Ph.D.

Frequency of Test Tone	Coefficient of Sound-Absorption
128 d.v.	.39
512 d.v.	.40
2048 d.v.	.48

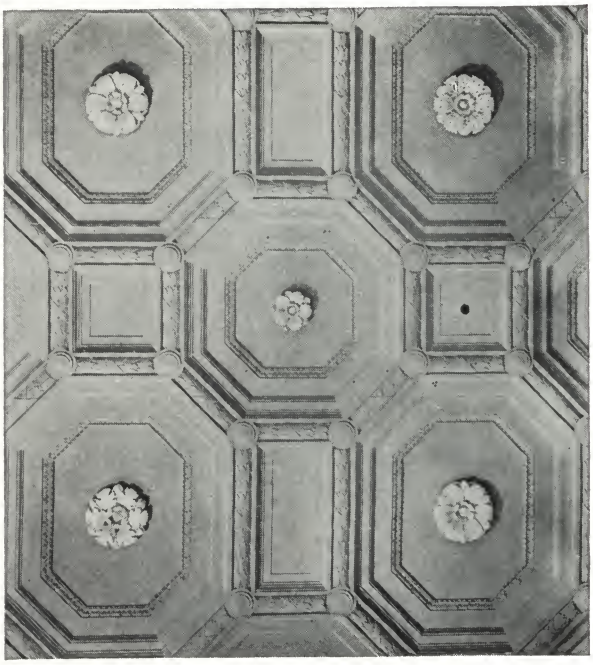
Samples of Kalite Plasters will be sent on application to any Certain-teed Sales Office

See page 4 for partial list of completed Kalite jobs



Interior of the International Music Hall, Rockefeller Center (Radio City Section), New York City—Entire Fluted Ceiling and Walls Produced in Kalite Sound Absorbing Plaster

Close-up of Ornamental Ceiling Coffer Fabricated with Kalite Cast Acoustic Plaster—Court of Appeals



Ornamental Precast Sound Absorbing Ceiling Fabricated with Kalite Cast Acoustic Plaster—Courtroom No. 3

Federal Courthouse Building, New York City

Jas. Stewart & Co., Inc., Builders — Cass Gilbert, Architect — Executed by F. L. Hewes, Inc.

CERTAIN-TEED PRODUCTS CORPORATION

KALITE CAST ACOUSTIC

This is a high grade material for plain and ornamental casting purposes; it is made of a pumice aggregate and gypsum binder and furnished in a medium coarse and fine texture. This product combines high sound absorbing properties with structural strength, sharp outline of arrises, decorative detail in the finished casting, and a most pleasing texture and appearance.

The base of Kalite Cast Acoustic is a light, porous, volcanic silica of extreme purity, mined in the Salton Sea area, Imperial County, California. Unusual forces of nature and the geological conditions which prevail in this area formed a material having rare and unique physical characteristics. It is of unusual crystalline form. When properly blended to form casting plaster, it yields a resultant product having unusually high sound absorption, strength, and sharp lined casts.

Kalite Cast Acoustic in either the coarse or fine textures is available in five colors: Natural White, Sandstone, Limestone, Light Buff, Medium Buff. In addition, if additional decoration is desired, satisfactory results can be obtained with Certain-teed Non-bridging Lacquers without impairing its sound absorbing properties to any practical extent.

Kalite Cast Acoustic opens another and extremely interesting avenue to the architect and engineer to combine sound control with ornamental and decorative design at a reasonable cost.

Practically any architectural motif or ornamental design as produced in ordinary white casting plaster can be carried out in accurate detail with Kalite.

Kalite Cast Acoustic is recommended for ornamental cast work in all types of buildings, such as assembly rooms, libraries, theatres, churches, auditoriums, banks and all monumental types of buildings, lobbies, and corridors, public meeting rooms, or wherever it is desirable to combine sound control with decorative architectural motifs.

Kalite Cast Acoustic has been thoroughly proven in commercial work and has been successfully developed both from the technical standpoint of acoustics and practical workability.

In field tests, conducted in interiors where Kalite Cast Acoustic has been installed, this Certain-teed material proved completely satisfactory, meeting all specifications.

Specifications

Specifications for decoration are available upon application at any sales office of the Certain-teed Products Corporation.

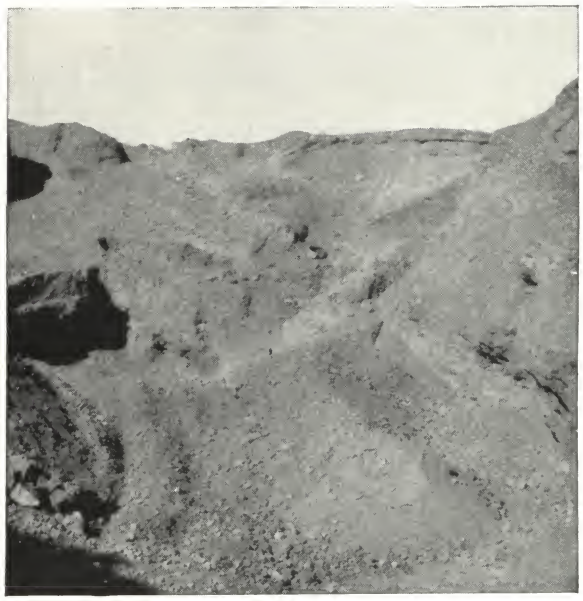
Interior of Court Room No. 1, Post Office and Courthouse Building, Columbus, Ohio

HENRY ERICSSON COMPANY, General Contractors, Chicago, Ill. RICHARDS, MCCARTHY & BULFORD, Architects, Columbus, Ohio

Ornamental Coffer Ceiling, Cornice and Frieze, as well as Wall Treatment of Fluted Pilasters, and Ashlar Panels in between. Pilasters are fabricated of Kalite Cast Acoustic Plaster. The acoustics of the courtroom were tested by the U. S. Bureau of Standards after the installation of Kalite, and accepted as satisfactory.

PARTIAL LIST OF KALITE INSTALLATIONS

Radio City Theatre (Music Hall), New York, N. Y.
Radio City Theatre (New Roxy), New York, N. Y.
Radio City Building No. 10
Auditorium, Department of Interior, Washington, D. C.
Bankers Trust Building, New York, N. Y.
Continental Bank Building, New York, N. Y.
Hotel 10 Park Avenue, New York, N. Y.
Loew's Boulevard Theatre, New York, N. Y.
Metropolitan Life Insurance Building, New York, N. Y.
Public School No. 76, New York, N. Y.
Translux Theatre, 49th Street, New York, N. Y.
Ex-Lax Building, Brooklyn, N. Y.
Lincoln Bank Building, Brooklyn, N. Y.
Renken Dairy Building, Brooklyn, N. Y.
Vitaphone Studios, Brooklyn, N. Y.
Warner Brothers Studio, Brooklyn, N. Y.
Radio Station WEBR, Buffalo, N. Y.
Brooklyn State Hospital, Creedmore, N. Y.
Empire Theatre, Mobile, Ala.
Yale University (Athletic Office), New Haven, Conn.
Yale University (Elm and College Quadrangle), New Haven, Conn.
Yale University (Wheelock Quadrangle), New Haven, Conn.
Yale University (1 and 1X Quadrangle), New Haven, Conn.
Mantino State Hospital, Mantino, Ill.
St. Mary's Church, Pontiac, Ill.
Technical High School, Springfield, Mass.
Cocktail Room, Muhlbach Hotel, Kansas City, Mo.
U. S. Post Office Building, New Bern, N. C.
RKO Theatre, Trenton, N. J.
Post Office and Courthouse, Columbus, Ohio
Wooster College Auditorium, Wooster, Ohio
City Hall and Courthouse, Easton, Pa.
Easton Hospital, Easton, Pa.
Yorktown Theatre, Ogonty, Pa.
Grange Theatre, Philadelphia, Pa.
Midway Theatre, Philadelphia, Pa.
St. Bernard's Roman Catholic Church, Pittsburgh, Pa.
Penn State College (Two Buildings), State College, Pa.
Library Building, Providence, R. I.
Administration Building, University of Tennessee, Knoxville, Tenn.
Melrose Theatre, Inc., Dallas, Tex.
Republic Bank Building, Dallas, Tex.
Williamsburg Theatre, Williamsburg, Va.



Open Pit Mining in Extinct Volcano Area Showing Kalite 60 Feet in Thickness

Ornamental Precast Sound Absorbing Ceiling Fabricated with Kalite Cast Acoustic Plaster, Court of Appeals, Federal Court Building, New York City

THE CLEVELAND GYPSUM COMPANY

Manufacturers of Hushkote Sound-Absorbent Plaster

Builders Exchange Building, CLEVELAND, OHIO

HUSHKOTE
Sound-Absorbent Plaster

Products

HUSHKOTE ACOUSTICAL PLASTER.

Also C-G Insulating Plaster (low thermal conductivity); Bondcoat, for forming a bond between concrete and plaster; Stuccosite, for salvaging disintegrated magnesite stucco; Walltex, a plastic texture material for resurfacing old plaster; Cover Coat, a casein paint in convenient powder form; Colored exterior and interior plaster finishes; Caenstone; Travertine cements; Barium plaster, for X-Ray rooms; Rubbercrete, a light weight material for hand ball and tennis courts (in colors).

HUSHKOTE SOUND-ABSORBENT PLASTER

Description

HUSHKOTE is a plaster containing an activating ingredient which, in the setting process, after troweling, reacts in a yeast-like manner, thereby producing a highly porous texture, similar to coral, which absorbs sound vibrations and controls reverberation. The activating process, exclusive with HUSHKOTE, eliminates all cost for after-treatment of the plaster surface. The finished surface possesses a pleasing and decorative, no-glare "suede" texture and is of proper hardness to withstand normal wear-and-tear. HUSHKOTE is furnished in colors as well as in white. With only small decrease in acoustical efficiency, it may be painted with any good paint which does not close the surface-pores.

U. S. BUREAU OF STANDARDS SOUND ABSORPTION TEST
July 25th, 1935
THICKNESS OF HUSHKOTE—½ INCH. APPLIED OVER GYPSUM BASE COAT ON METAL LATH

Frequency.....	128	256	512	1024	2048	4096
Coefficient of Sound Absorption.	.13	.24	.45	.71	.56	.49

The above values give a noise coefficient of 0.50.
Copy of Bureau's letter giving above information will be furnished on request.

Covering Capacity

HUSHKOTE covers approximately 140 sq. yds. of surface per ton of material when applied in the customary half-inch thickness. Its cohesion is such that little or no plaster is wasted by dropping to the floor, either during or after application—a factor important to economy.

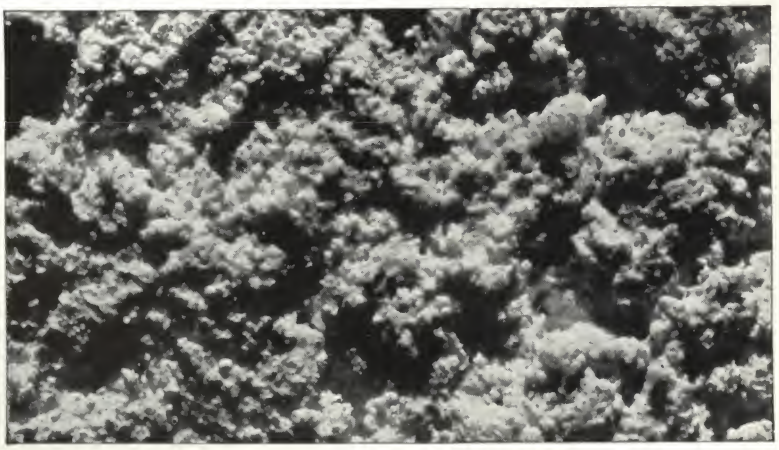
Application

Any qualified plasterer, without previous experience, can apply HUSHKOTE successfully and as rapidly as ordinary plaster, simply by following the instructions as furnished. No special skill or procedure is required, beyond being careful to see that the full half-inch thickness is maintained over the entire surface.

Specification

Areas to receive acoustical treatment shall be given scratch and brown coats in the ordinary manner. Surface of brown coat shall be lightly scored or cross scratched for bond and allowed to dry thoroughly. HUSHKOTE, manufactured by THE CLEVELAND GYPSUM COMPANY, Cleveland, Ohio, shall be applied to dry base coat, without sprinkling or otherwise reducing the suction, in two coats each about ¼ inch thick. Leave surface as it comes from the trowel. Allow at least one hour to take up, then double up with the second coat, bringing the whole surface to a full half-inch thickness. Finish coat shall be laid on as smoothly as possible, to be followed with the light troweling, producing a true and even surface.

In all operations, avoid compacting the plaster. Finished surface should show a multitude of fine pores extending into the body of the HUSHKOTE.



Magnified Internal Section (10 Diameters)
Note the interconnected meshwork of surface-pores and internal "canals." This structure, similar to that of coral, effectively "swallows" sound waves and prevents unpleasant or excessive reverberation

Additional Information

Full data in regard to HUSHKOTE or the other products listed above will be gladly furnished on request sent to our Cleveland office.

R. GUASTAVINO COMPANY

40 Court Street
BOSTON, MASS.

500 Fifth Avenue
NEW YORK, N. Y.

REPRESENTATIVES

ATLANTA, GA.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
DETROIT, MICH.
NEW ORLEANS, LA.
ST. LOUIS, MO.
SAN FRANCISCO, CALIF.
PITTSBURGH, PA.

CANADA: R. GUASTAVINO CO. OF CANADA, LTD.
660 St. Catherine Street, West, Montreal

Products

GUASTAVINO TIMBREL ARCH CONSTRUCTION.
SPECIAL CERAMIC TILE, glazed and unglazed.
RUMFORD CERAMIC ACOUSTIC TILE.
AKOUSTOLITH sound-absorbing stone, in tile and ashlar sizes.
AKOUSTOLITH sound-absorbing plaster, patented.
CASTACOUSTIC sound-absorbing casting plaster.

Services

This Company maintains a competent engineering staff to work and consult with architects on all problems concerning the use of its products, both structural and acoustical.

Exhibits

The GUASTAVINO COMPANY maintains a complete exhibit of its products in its New York Office and also in the Architects' Sample Corporation at 101 Park Avenue, New York, N. Y.

GUASTAVINO TIMBREL ARCH CONSTRUCTION

This type of fireproof construction, first introduced into the United States in 1885 by the late R. Guastavino, Sr., has been used in domes of more than 130-ft. span. It is light and shell-like, a three course arch weighing only 40 lbs. per square foot.

The vaulting can be designed to carry any load desired for residence, office, ecclesiastical or heavier bridge work, tests for fire and load having been passed by the New York Building Department and the Massachusetts Institute of Technology.

Method of Construction

Tiles 6x12 in. to 6x24 in., 1 in. thick are laid flat in cement mortar and bonded together to make a solid and homogeneous mass. For ordinary three course work, the crown of the arch is about 4 in. thick.

While domes or vaults may show exterior as well as interior lines exposed as part of the design, they are also built with an exterior leveling to obtain flat or sloping surfaces. In the case of floor vaults, this is done by "bridges and flatwork" formed by dwarf walls about 24 in. on centers which carry the tile leveling. The air cells so formed are often used for concealing heating and ventilating ducts.

Architectural Adaptability

Guastavino Construction affords a wide range of possibilities in the matter of design as it can be used in practically any architectural style. (See typical details on following pages.) The rough tile soffit may be exposed, or a finish tile used. If a finish surface is wanted we manufacture and install glazed and unglazed ceramic tile, and AKOUSTOLITH Sound-absorbing Tile.

Engineering Services

It will be readily seen by examining the detail drawings that we must necessarily work in close co-operation with the architect. For vault, dome or arch work of a constructive nature our engineers will work with the architect to obtain the effect he desires and then design the construction to fit the requirements.

Specifications

Specifications will be written by us for this work and its relation to other work in the building.

For typical specifications with AKOUSTOLITH Tile soffit course, see page 3, AKOUSTOLITH Tile specifications Ceiling Work—(a).

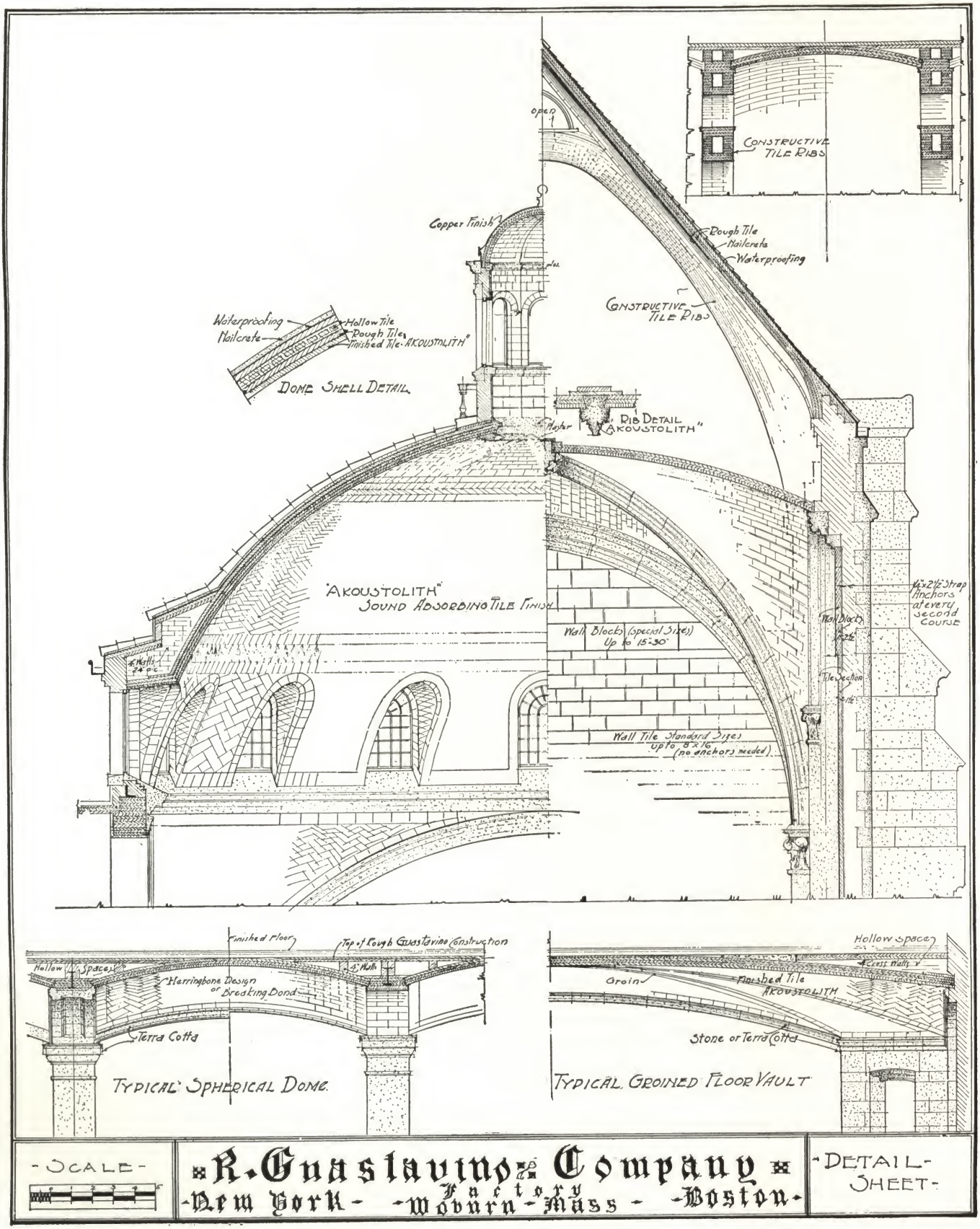
Installation

Guastavino Timbrel Arch Construction is always installed by our own mechanics, specially trained in this work.

A FEW OUTSTANDING INSTALLATIONS

Cathedral of St. John the Divine, New York, N. Y., Cram & Ferguson, Architects.
Grace Cathedral, San Francisco, Cal., Lewis P. Hobart, Architect; Cram & Ferguson, Consulting Architects.
St. Albans Cathedral, Washington, D. C., Frohman, Robb & Little, Architects.
Nebraska State Capitol, Lincoln, Neb., Bertram Grosvenor Goodhue and Bertram Grosvenor Goodhue Assoc., Architects.
Riverside Church, New York, N. Y., Pelton, Allen & Collens, Architects.
Chicago University Chapel, Chicago, Ill., Bertram Grosvenor Goodhue Assoc., Architects.
Indiana World War Memorial, Indianapolis, Ind., Walker & Weeks, Architects.
National Shrine of the Immaculate Conception, Washington, D. C., Maginnis & Walsh, Architects.
Princeton University Chapel, Princeton, N. J., Cram & Ferguson, Architects.
Duke Chapel, Durham, N. C., Horace Trumbauer, Architect.
Benjamin Franklin Memorial and Franklin Institute Museum, Philadelphia, Pa., John T. Windrim, Architect.
Second Presbyterian Church, Newark, N. J., Wm. Bayard Willis, Architect.
East Liberty Presbyterian Church, Pittsburgh, Pa., Cram & Ferguson, Architects.
Heinz Memorial Chapel, University of Pittsburgh, Pittsburgh, Pa., Charles Z. Klauder, Architect.

R. GUASTAVINO COMPANY



AKOUSTOLITH

Sound-absorbing Artificial Stone in Tile or Ashlar Form

Description

AKOUSTOLITH is an artificial stone with a very high acoustical value. Tests by the National Bureau of Standards give a coefficient of absorption for AKOUSTOLITH up to 90% at 512 cycles (C_4). The sound-absorbing efficiency varies according to thickness and grade.

AKOUSTOLITH is genuine masonry, non-combustible and non-smoke producing. It will not warp and water has no effect on its structure. It can be easily cleaned by vacuum or by washing.

Uses

Owing to its light weight and facility of manufacture AKOUSTOLITH is easily adapted to plain or elaborate architectural forms. It is used in tile form on walls, ceilings, arches, vaults and other architectural forms of a constructive nature. In ashlar sizes it has been used considerably by architects on sidewalls in lieu of stone work and has been successful in meeting their requirements.

Textures and Colors

It has a fine granular surface and is made in textures similar to that of natural stones or as desired. It is made in colors ranging from gray white through various shades of buff, brown or other colors of the natural stone.

Sizes and Weight

AKOUSTOLITH is manufactured in any size from the smaller tile dimensions, 3x6 in.; 4x8 in.; 5x10 in.; 6x12 in. and 8x16 in. usually about 1 in. thick and for this thickness weighs about 4 lbs. per sq. ft. This light weight permits AKOUSTOLITH to be used in places where heavier material would be impracticable—for instance, ceiling work.

For wall ashlar, AKOUSTOLITH can be made in sizes up to 30x60 in. from 1½ to 2½ in. thick depending on size. It can also be moulded or cast in the usual architectural shapes. The distance from the backing to the finish face of AKOUSTOLITH will vary from 1½ in. for the smaller tile sizes to 3 in. for the larger ashlar sizes.

Installation

AKOUSTOLITH Tile used on ceilings has primarily been installed in connection with our regular GUASTAVINO Arch Construction, using it as a soffit course and backing up with two or more layers of our rough tile construction. It is also installed by applying it directly to the soffit of concrete floor slabs or to wire lath and cement plaster ceilings.

For sidewall installations it can be cemented directly to masonry surfaces without scratch coat, if the surface is reasonably true.

SPECIFICATIONS

Ceiling Work

(a) As Part of Guastavino Timbrel Arch Construction— Where indicated on drawings, or as hereinafter specified, the ceilings shall be constructed of Timbrel Tile arches by R. GUASTAVINO COMPANY, New York and Boston, with the soffit of the arch faced with (give size of tile) AKOUSTOLITH sound-absorbing stone tile. Tile to be laid in pattern shown.

Arch construction in addition to the soffit course of AKOUSTOLITH Tile shall consist of not less than two layers of good, hard burned, rough, semi-porous terra cotta tile, ranging from 1x6x12 ins. to 24 ins. in length. Tile shall be laid in 1 to 2½ mix portland cement mortar and reinforced with steel rods or bars between the courses or between the ends of the tile of the same course as may be necessary.

Centering—The contractor for the above vaulting shall provide and erect all centers required for the installation of his work. Centering shall remain in place until the mortar is set and hard, after which he shall remove all his centering from the building.

Vault Supports—The general contractor shall leave out recesses, or build masonry corbels or brackets in walls as well as any steel necessary for the support of the tile vaulting as shown on the working drawings of the architect and tile vault contractor.

(b) For Installing "Akoustolith" Tile Against Soffit of Concrete Floor Slabs—

Where indicated on the drawings, or as hereinafter specified, the ceiling or soffit of concrete floor slabs and beams shall be faced with AKOUSTOLITH sound-absorbing stone tile as manufactured by R. GUASTAVINO COMPANY, New York and Boston. Tile shall be (give size), laid in approved portland cement mortar in patterns as shown, directly against the cement slab and beams which have been properly roughened and cleaned by others. Joints ¼ in., colored as directed with approved mortar colors.

(c) For Installing "Akoustolith" Tile on Metal Lath Ceilings—

Note for Metal Lath and Furring Specifications: Where AKOUSTOLITH is specified or indicated on ceilings, beams, etc., the metal lath foundation should be formed of 1 in. standard channels set 12 in. o.c., covered with 3.4 lb. metal lath.

Note for Plastering Specifications: Wherever AKOUSTOLITH Tile is required for finished ceilings the metal lath shall be given two coats of portland cement mortar, the last to be scratched.

Wall Work

Where indicated in drawings or hereinafter specified the sidewalls shall be finished with AKOUSTOLITH sound-absorbing stone manufactured by R. GUASTAVINO COMPANY, New York and Boston. This shall be in ashlar (give sizes) of color and texture as selected by the architect, and laid up in pattern as shown on the drawing with a ¼-in. joint. AKOUSTOLITH ashlar shall be cemented directly against the masonry wall with portland cement mortar and anchored if necessary.

TYPICAL INSTALLATIONS

Temple Emanu-El, New York, N. Y., Robert D. Kohn, Charles Butler and Clarence S. Stein, Architects; Mayers, Murray & Phillip, Associate Architects.

Department of Commerce Building, Washington, D. C., York & Sawyer, Architects.

U. S. Post Office, Custom House and Courthouse, Duluth, Minn,. Supervising Architect, Treasury Department.

Oklahoma City Post Office, Oklahoma City, Okla., Supervising Architect, Treasury Department.

Girard College Chapel, Philadelphia, Pa., Thomas Martin & Kirkpatrick, Architects.

Church of St. Andrew and St. Paul, Montreal, Canada, H. L. Fetherstonhaugh, Architect.

Federal Reserve Bank, Boston Mass., R. Clipston Sturgis, Architect.

Federal Reserve Bank, New York, N. Y., York & Sawyer, Architects.

Federal Reserve Bank, Richmond, Va., Sill, Buckler & Fenhagen, Architects.

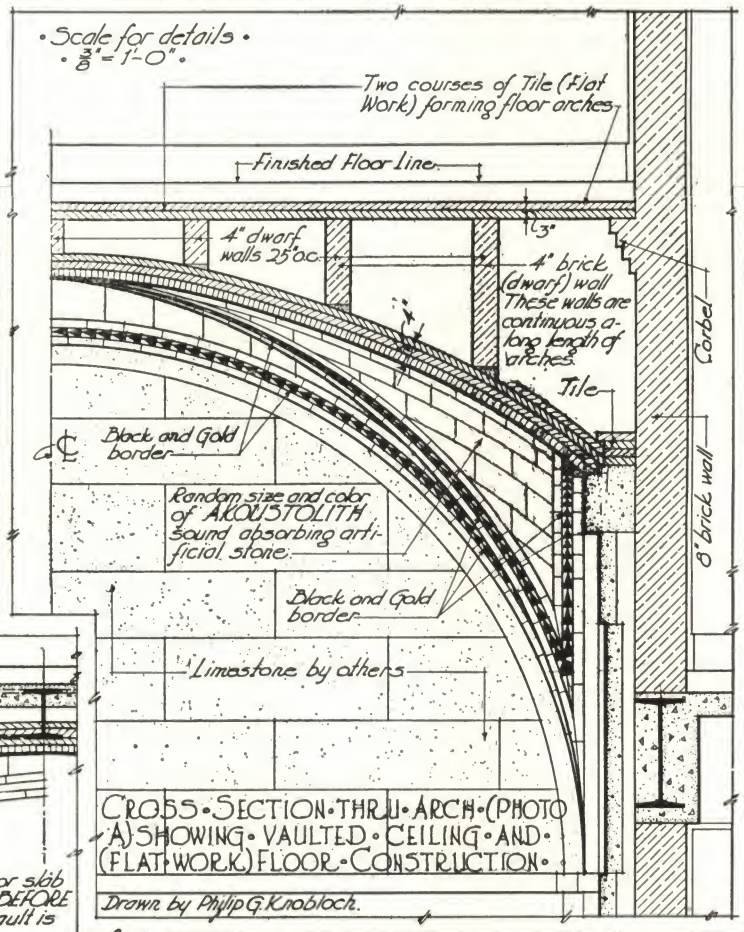
Federal Reserve Bank, Louisville, Ky., D. X. Murphy & Bro., Architects.

Federal Reserve Bank, Baltimore, Md., Parker, Thomas & Rice, Architects.

Federal Reserve Bank, Philadelphia, Pa., Bunting & Shrigley, Architects.

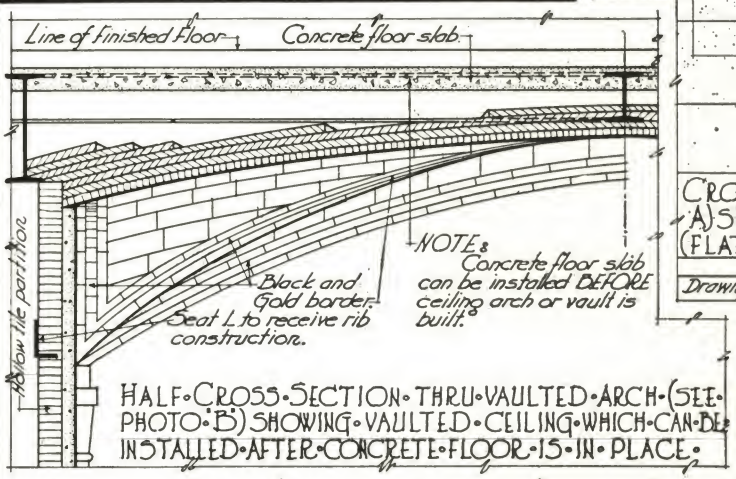
The Archives Building, Washington, D. C., John Russell Pope, Architect.

VESTIBULE ENTRANCE TO SALMON TOWER
YORK & SAWYER ARCH'TS. WEST 42ND STREET N.Y.C.

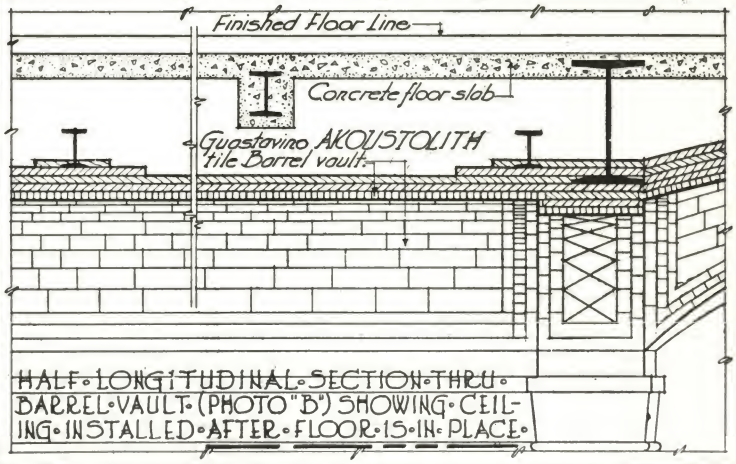


CROSS • SECTION • THRU • ARCH • (PHOTO A) SHOWING • VAULTED • CEILING • AND • (FLAT • WORK) FLOOR • CONSTRUCTION •

Drawn by Philip G. Knobloch.



HALF • CROSS • SECTION • THRU • VAULTED • ARCH • (SEE • PHOTO • B) SHOWING • VAULTED • CEILING • WHICH • CAN • BE • INSTALLED • AFTER • CONCRETE • FLOOR • IS • IN • PLACE •



HALF • LONGITUDINAL • SECTION • THRU • BARREL • VAULT • (PHOTO "B") SHOWING • CEILING • INSTALLED • AFTER • FLOOR • IS • IN • PLACE •

CORRIDOR ENTRANCE TO SALMON TOWER
YORK & SAWYER ARCH'TS. WEST 42ND STREET N.Y.C.

R • Guastavino Company

AKOUSTOLITH SOUND-ABSORBING PLASTER

General Description

AKOUSTOLITH Sound-absorbing Plaster is a light weight masonry material, trowelled on as a finish coat over the ordinary base coats. Only regular plasterer's tools are required. It is now, and always has been a fireproof material entirely unaffected by water. The surface is hard and it may easily be cleaned by washing. AKOUSTOLITH Plaster *requires no floating, stippling or other mechanical processes to secure its efficiency.* More than ten years successful use in almost every type of building has proved its architectural correctness and acoustical efficiency.

Appearance

The texture of AKOUSTOLITH resembles a sand finish plaster. Its natural color is very light gray, almost white. It may be colored to almost any shade by the use of mortar colors. AKOUSTOLITH may be painted by using special thin acoustical paint.

Absorption Value

Tests from Bureau of Standards show AKOUSTOLITH Plaster to be 32% efficient at C_4 for the ½ in. thickness, and 19% efficient at C_4 for the ¼ in. thickness.

Covering Capacity

AKOUSTOLITH Plaster ½ in. thick will cover from 100-110 yds. per ton. At ¼ in. thickness it will cover 165-175 yds. per ton.

Servicing

It is our practice to service each job in the United States with a representative at the starting of the installation. This is usually done at no extra charge.

NOTES FOR SPECIFICATION WRITER

For New Buildings—Where AKOUSTOLITH Plaster is to be applied against masonry construction or wire lath the usual heavy scratch coat shall be applied, thoroughly covering irregularities. A brown coat shall be applied if necessary, according to manufacturer's specifications.

The base coats may be composed of gypsum, portland cement, or lime plaster. The surface on which the binder coat is to be applied shall be thoroughly cross-scored to provide a proper bond and shall be sufficiently wet to stop most of the suction.

When the scratch coat (or brown coat if used) is properly set but still "green," apply a ⅛-in. binder coat composed of a rich mixture of hydrated lime and sand to be followed immediately with the finish coat of AKOUSTOLITH Plaster (½ or ¼ in. thick as specified), this coat to be applied in strict accordance with the manufacturer's directions.

For Swimming Pools—Over swimming pools or other places where AKOUSTOLITH Plaster is to be applied on walls or ceilings exposed to continuous dampness, the base coats shall be composed of portland cement plaster and applied in accordance with the standard specifications of the Portland Cement Association.

The binder coat shall be of the following proportions by weight: ½ part portland cement, 1 part sand, ⅛ part hydrated lime. After the base coats have thoroughly dried and obtained their full shrinkage, same shall be dampened with water to stop most of, but not all, the suction. The binder coat shall then be applied ⅛ in. in thickness and followed immediately with one coat of AKOUSTOLITH Plaster (thickness ½ or ¼ in. as specified).

Specification

Where acoustical treatment is shown on the plans and in the following spaces ..... it shall be AKOUSTOLITH Plaster as manufactured by R. GUASTAVINO COMPANY of New York and Boston, applied (specify thickness ½ or ¼ in.) in strict conformity with the manufacturer's directions.

CASTACOUSTIC PLASTER FOR ORNAMENTAL WORK

Purpose

CASTACOUSTIC is a sound-absorbing Plaster designed expressly for ornamental or coffered surfaces where acoustical treatment is desired, and where a surface having a period design or architectural character is required. (CASTACOUSTIC is not suitable for trowel application.) Almost any type of ornamental work which can be cast in plaster moulds can be formed in CASTACOUSTIC Plaster. Elaborate ornament with sharp undercut sections is difficult to cast satisfactorily.

Appearance

CASTACOUSTIC has a fine granular appearance and on high ceilings is scarcely distinguishable from ordinary plaster. In its natural color CASTACOUSTIC is a very light gray, almost white. It can be colored to any shade by the use of mortar colors added by the plasterer.

Absorption Value

Tests made by Electrical Research Products Corp. on 1 in. CASTACOUSTIC show a sound-absorbing efficiency of more than 46% at 512 cycles (C_4).

Structure

When mixed with the proper quantity of water, the structure of CASTACOUSTIC Plaster is open and continuously porous from the finish face completely through its entire depth. This porous structure provides the highest acoustical efficiency.

Covering Capacity

The covering capacity of CASTACOUSTIC Plaster is as follows: applied 1 in. thick one ton will cover approximately 45 yds.

Specification

The following rooms shall have all ornamental castings, as indicated on drawings, cast in CASTACOUSTIC Plaster as manufactured by R. GUASTAVINO COMPANY of New York and Boston. CASTACOUSTIC Plaster shall be mixed in strict accordance with the manufacturer's directions. The plasterer shall submit a sample casting for the approval of the architect. All cast work shall be set accurately and straight. Reinforcing and backing shall be used as would be required for the best type of ordinary ornamental plaster work.

REPRESENTATIVE LIST OF ACOUSTIC PLASTER INSTALLATIONS

Riverside Church, New York, N. Y., Henry C. Pelton and Allen & Collens, Architects
Appleton Chapel, Harvard University, Cambridge, Mass., Coolidge, Shepley, Bulfinch & Abbott, Architects
Payne Whitney Gymnasium (including swimming pools), Yale University, New Haven, Conn., John Russell Pope, Architect
Myron Taylor Hall, Cornell University, Ithaca, N. Y., Jackson, Robertson & Adams, Architects
Church of St. Andrew and St. Paul, Montreal, Canada, H. L. Fetherstonhaugh, Architect
New York Medical Centre, New York, N. Y., Coolidge, Shepley, Bulfinch & Abbott, Architects
Belle Skinner Music Building, Vassar College, Poughkeepsie, N. Y., Allen & Collens, Architects
State Capitol Building, Charleston, W. Va., Cass Gilbert, Architect
Graduate School, Yale University, New Haven, Conn., James Gamble Rogers, Architect
Harvard University, Cambridge, Mass., more than 17 buildings since 1925, including Lowell, Dunster, Eliot, Leverett and Adams Houses, Physics Laboratory, Faculty Club and Biology Building, Coolidge, Shepley, Bulfinch & Abbott, Architects
Geography Building, Harvard University, Cambridge, Mass., Horace Trumbauer, Architect
National Education Association Building, Washington, D. C., Frank Irving Cooper Corp., Architects
Herald Traveler Building, Boston, Mass., Henry B. Alden, Architect
Sports Building, Vassar College, Poughkeepsie, N. Y., Allen & Collens, Architects
Pepper Hall, Franklin Memorial, Philadelphia, Pa., John T. Windrim, Architect
U. S. Supreme Court Building, Washington, D. C., Cass Gilbert, Architect
East Liberty Presbyterian Church, Pittsburgh, Pa., Cram & Ferguson, Architects
Indiana World War Memorial, Indianapolis, Ind., Walker & Weeks, Architects

MEMORANDA

JOHNS-MANVILLE

EXECUTIVE OFFICES
22 East 40th Street, NEW YORK, N. Y.
Member of The Producers' Council, Inc.

Products

JOHNS-MANVILLE ACOUSTICAL AND SOUND CONTROL TREATMENTS.

For the following Johns-Manville products, see File Index: Asbestos and Asphalt Shingles; Built-up Roofs; Roof Insulation; Home Insulation; Insulating Board and Insulating Lath; Pipe Coverings and Insulations; Asphalt Tile Flooring; Transite, Flat and Corrugated Sheets; Asbestos Wainscoting and Flexboard.

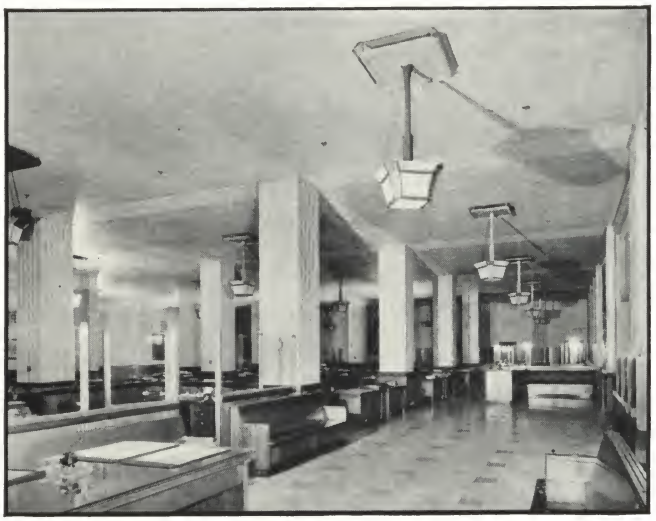
JOHNS-MANVILLE ACOUSTICAL AND SOUND CONTROL TREATMENTS

Johns-Manville has developed a technique for the use and application of acoustical materials which includes materials fabricated to very definite specifications and, in every case, a design and finished product which is built to fit a specific need or architectural requirement.

To work out the practical application, Johns-Manville maintains a staff of trained acoustical engineers in the principal cities of the United States, Canada and Europe.

J-M Sound Control Materials

There is a Johns-Manville sound control material available for every type of problem. The most important of these materials are described below, and on a later page will be found a table giving the principal characteristics of all materials, including their sound-absorbing efficiencies.



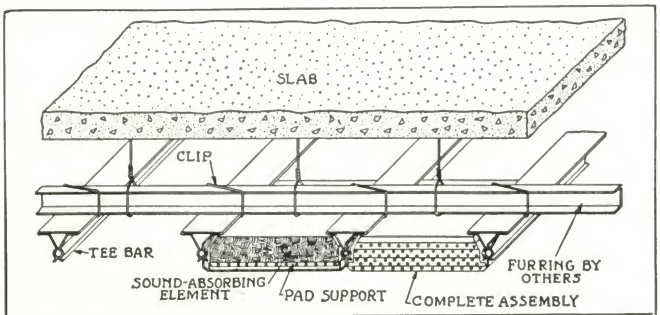
Sanacoustic Tile Installed in the Wholesale Department of Marshall Field & Company, Chicago

Sanacoustic Tile

Sanacoustic Tile has the widest adaptability and is most nearly a universal purpose material. It consists of a perforated sheet metal tile, finished in baked enamel, which serves as a container for a special rock wool pad, the sound-absorbing medium. The tile unit snaps into tee-bars attached to the surface to be treated.

Its washable baked enamel surface makes painting for maintenance purposes unnecessary. However, it can be repeatedly painted without impairing its sound-absorbing efficiency. Sanacoustic Tile is one of the few acoustical materials which is rated as non-combustible. Furthermore, the ease with which the tile units can be removed makes possible the complete salvage of an installation, in case of alterations, and affords a convenient means for making changes in lighting outlets. For use in damp and humid locations, such as kitchens and natatoriums, the perforated tile and accessories are fabricated of corrosion-resisting metal.

Sanacoustic Tile is also supplied pre-decorated in various designs (16x16-in. size only).



SANACOUSTIC TILE ASSEMBLY

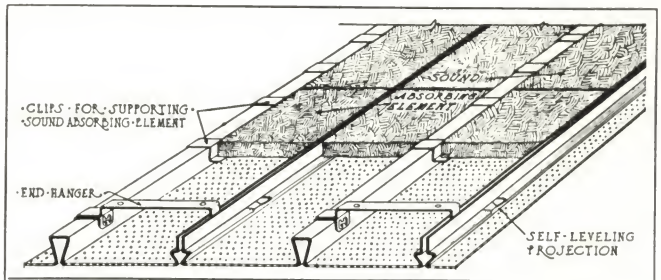
Sanacoustic Tile Ceiling Over a Swimming Pool
Transite Acoustical Tile, because of its humidity-resisting properties, is also recommended for this purpose

Sanacoustic Panels

Sanacoustic Panels have all the advantages of Sanacoustic Tile, but are not limited to tile sizes. This type of acoustical treatment consists of variously sized sheets of perforated metal finished with painted decoration, and backed with a rock wool sound-absorbing element.

Sanacoustic Holorib

Sanacoustic Holorib is a modification of Sanacoustic Tile which makes possible the use of large structural units of perforated metal with the advantageous features of Sanacoustic Tile. It consists of large sheets of perforated metal, fabricated in the well-known Holorib shape and backed with a rock wool sound-absorbing element.

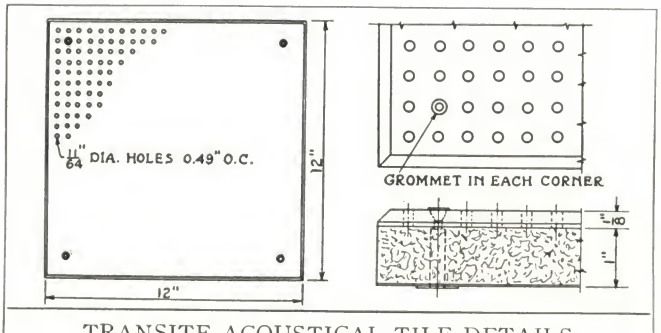


SANACOUSTIC HOLORIB FOR INTERIORS

One of the novel features of this construction is that the Holorib section with a J-M Rock Cork sound-absorbing element, can be topped with Rigid Roofinsul and a J-M Asbestos Built-up Roof to provide a metal ceiling, acoustical treatment, thermal insulation and built-up roof in virtually one unit structure.

Transite Acoustical Tile

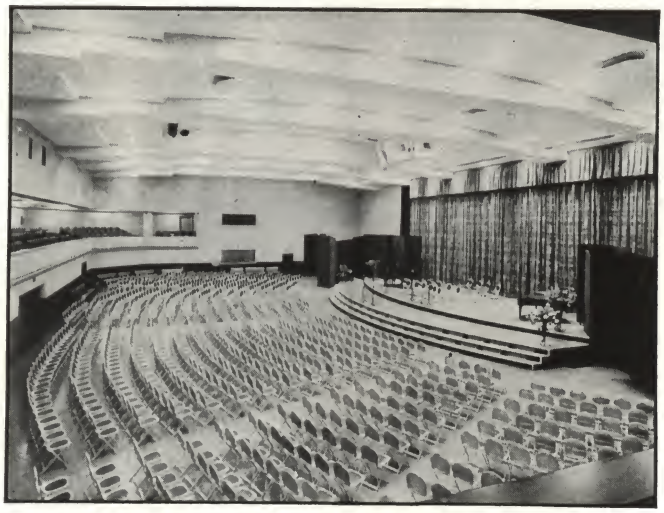
Transite Acoustical Tile is a highly efficient sound-absorbing unit consisting of perforated Transite, backed with a rock wool sound-absorbing element covered with a sheet of asbestos paper. Each unit is separately fastened to furring strips. Like Sanacoustic



TRANSITE ACOUSTICAL TILE DETAILS

Tile this material is non-combustible and fully as satisfactory from the standpoint of maintenance and permanence. In fact, no other material quite equals the peculiar qualities of Transite under exacting service requirements.

Furnished in two colors: variegated buff and cream white. Can be painted as desired.



The World's Largest Broadcasting Studio, Located in Radio City, New York

Wall and ceiling surfaces finished with Transite Acoustical Panels and the entire room separated from the building structure by the J-M System of Sound Isolation.
(Photograph, courtesy of the National Broadcasting Co.)

Transite Acoustical Panels

Transite Acoustical Panels consist of large sheets of perforated Transite backed by a rock wool sound-absorbing element. This form of acoustical treatment is similar to Transite Acoustical Tile with the added advantage of larger units. If Transite Acoustical Panels are installed with square edges and butt joints the effect of large, smooth, unbroken areas is obtained.

Transite Acoustical Wainscoting

Transite Acoustical Wainscoting is a development of perforated flat Transite, to provide an attractive, yet effective sound-absorbing construction for areas where marble or ceramic tile would be used. It consists of a facing of $\frac{3}{16}$ in. Transite, perforated to make it sound permeable, applied over a rock wool sound-absorbing element. The Transite sheets are 2x4 ft., with sides beveled, in either wax finish, or plain for subsequent decoration. The rock wool sound-absorbing element is a semi-rigid block, 10½x18 in. by 1 in. thick.

Transite base, ⅜ in. thick, 6 in. wide and beveled, is supplied in natural gray or black lacquer finish.

Transite Acoustical Tile Installed in the Offices of the Chicago Sugar Company

The acoustical treatment was furred down 3 ft. 9 in. below the existing ceiling in this installation

The Rockoustile Treatment of St. Anselm's Church, Pittsburgh, Pa.
"Has not only corrected the reverberation, but has beautified the church"

Rockoustile Type A

Rockoustile Type A is a distinctively attractive acoustical material manufactured from mica which has been expanded by the application of heat. Its natural color is an iridescent golden ecru, but it is also furnished, as standard finish, painted an ivory cream. On special order it may be had in light-reflecting flat white and in slightly varying pastel shades of gray, buff, blue and pink. Can be supplied in square-cut or bevel-edged tile, as desired. Application is ordinarily effected by means of nails and cement.

Rockoustile Type A
In natural golden ecru—lends character and distinction to modern offices, and at the same time provides the quiet atmosphere so necessary to the efficient conduct of business

Rock Wool Acoustical Tile

Rock Wool Acoustical Tile provides an acoustical treatment consisting of a semi-rigid rock wool sound-absorbing element in the form of a tile, 12x12x1 in. thick, beveled on all edges, cemented in place. Cream-gray in color.

Nashkote

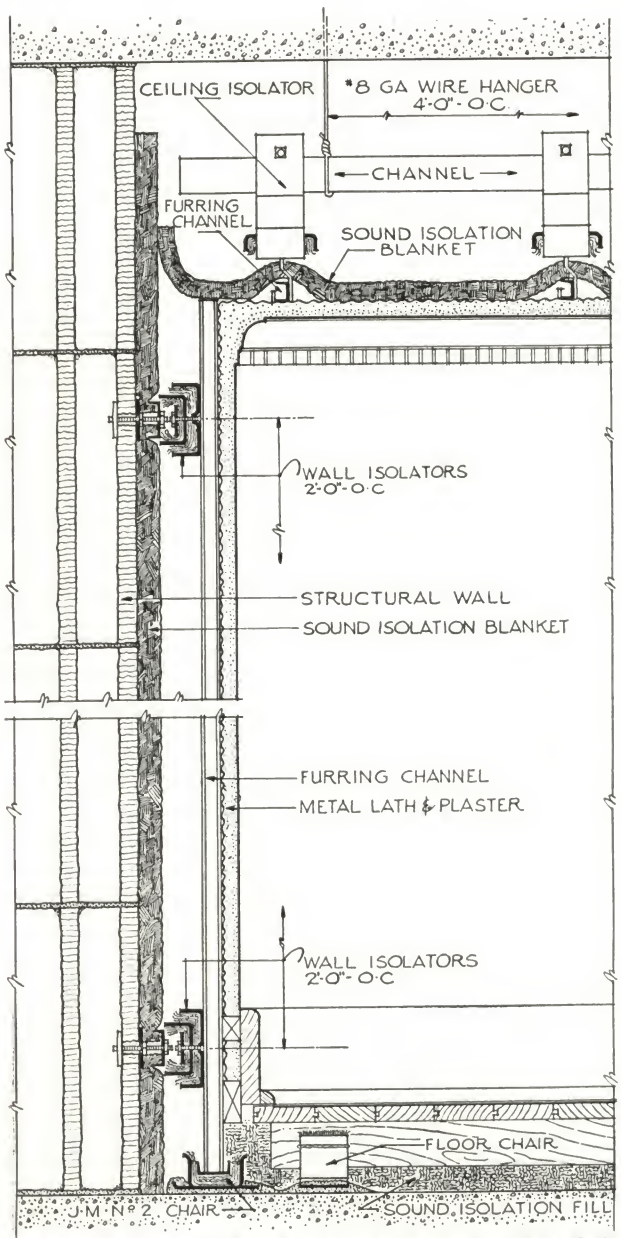
Nashkote Type Acoustical Finishes offer an acoustical treatment consisting of Asbestos Akoustikos Felt cemented to the surface to be treated with Acoustical Cement and covered with a membrane secured by Acoustical Size. This membrane may be painted muslin, which resembles smooth plaster, rough plaster or Caen stone, or it may be Kribble Cloth, awning cloth, burlap, etc. Sometimes no finishing membrane is used and the surface of the felt is sized, to result in a unique texture.

J-M System of Sound Isolation

The J-M System of Sound Isolation consists of lightweight isolators installed in floors, walls and ceilings as shown in the drawing, providing a means of securing a finished surface to a wall, ceiling or floor which not only holds the various parts together but also breaks the otherwise direct contact of solid materials which would conduct sound and vibrations. There are no through connections. The isolator units transform and absorb the vibrational energy. Sound isolation blanket or fill used with the isolators adds a sound-damping medium and prevents drum action. There are different types of chairs and isolators for different constructions—for walls, floors, suspended ceilings, machinery bases, etc.

J-M Sound Isolation Materials

Sound Isolation Blankets, Types KK, MK and MM—Composed of ½, 1 and 2-in. thicknesses of rock wool, stitched



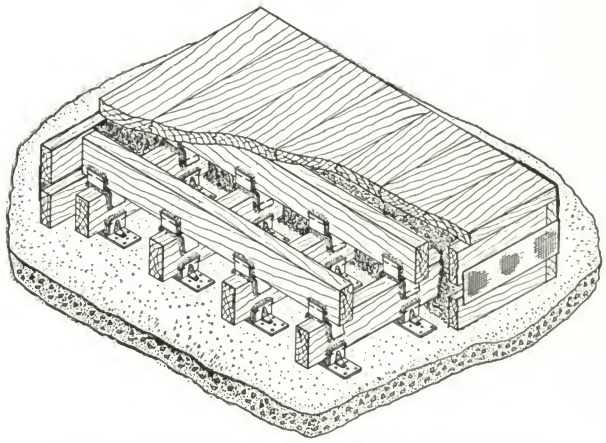
Johns-Manville System of Sound Isolation as Applied to Walls, Ceilings and Floors

between sheets of various materials. Type KK has flame-proofed Kraft paper both sides; Type MK, flame-proofed Kraft paper one side and flame-proofed muslin the other; Type MM, flame-proofed muslin both sides. Furnished in rolls 22 and 36 in. wide.

Sound Isolation Chairs and Wall or Ceiling Isolators—Shock-absorbing units consisting of metal supports or fasteners, and one or more layers of heavy, cushioning felt which comes between the structural member and the metal fastener. They absorb vibrations of all kinds, including those induced by mechanical means, by impact and by air-borne sounds.

Sound Isolation Fill—Rock wool used in the space between the finished floor and the floor structure as a sound-damping medium and to prevent drum action. Also used in platform construction for the same purpose.

Machinery Bases—For machinery bases, J-M Vibration Isolation Platforms are designed which isolate or divorce the vibrating mechanisms from the rest of the structure, and prevent the transmission of noise-producing vibrations. They make possible the allocation of machinery at points of economic advantage, without creating a disturbance in adjoining parts of the building.



Typical J-M Vibration Isolation Platform Construction

Sound Absorbing Linings for Ducts of Air Conditioning Systems

It is not enough to quiet and isolate the mechanical and power elements of an air conditioning system, because there is noise in the air stream which is accumulated as it passes through fans, washers and cooling coils. The solution to this problem lies in the use of efficient sound-absorbing linings within the ducts to remove and dissipate sound as it passes through them.

In the entire field of sound control there is no type of service which places such exacting requirements on a sound-absorbing material as does duct lining. A satisfactory material must be fireproof, highly sound-absorbent, moisture-resistant, and have a surface which will not materially increase friction losses in the duct system. Air-Acoustic Sheets, developed solely for this type of work, meet these specifications completely.

The necessary extent of the lining naturally depends upon the intensity of the noise. Generally speaking, however, a very appreciable and, in most cases, satisfactory reduction can be effected by lining a duct for a distance of at least ten times the average of its cross-sectional dimensions. In severe cases the entire duct must be lined, regardless of dimensions and length. In cases where ducts are unavoidably short, a honeycomb arrangement of sound-absorbing partitions must be used to divide large ducts into a number of smaller ones.

Air-Acoustic Sheets—Air-Acoustic Sheets are non-combustible, moisture-resistant sound-absorbents which are used chiefly inside air-conditioning units and ducts. Manufactured in rigid form from rock wool and a suitable binder. Net weight, 1½ lb. per sq. ft., 1 in. thick. Furnished 24x36 in., in thicknesses of ½ in. and 1 in.

Air-Acoustic Sheets Are Readily Installed in All Types of Sheet Metal Duct Construction
Note how smoothly the material is fitted into a typical bend

Broadcasting Studio Acoustics

There is no sound control problem as critical as that encountered in broadcasting studios. Not only must proper balance be maintained between the fundamentals, harmonics and over-tones of speech and music, as generated within the studios, but the isolation of extraneous sound from the studios and control rooms must also be carefully considered. *(See detail of* J-M System of Sound Isolation *on page 3.)*

Johns-Manville specializes in the design and construction of broadcasting studios, maintaining a consulting service for the assistance of architects, engaged on such projects. This service embraces all phases of the problem, including the selection of the studio site, planning the studio group, relationship of studios and control rooms, studio proportions and size, acoustical correction by the use of materials with the proper characteristics and distribution, together with the all-important consideration of adequate sound isolation. Some of the recent studio installations which have been made by Johns-Manville are:

KDKA Studios, Pittsburgh, Pa., N. B. C. Network.
WOW Studios, Omaha, Nebraska, N. B. C. Network.
WKY Studios, Oklahoma City, Okla., N. B. C. Network.
WENR Studios, Chicago, Ill., N. B. C. Network.
WMAQ Studios, Chicago, Ill., N. B. C. Network.
WGN Studios, Chicago, Ill., Mutual Broadcasting System.
WJZ Studios, New York, N. Y., N. B. C. Network.
WEAF Studios, New York, N. Y., N. B. C. Network.
WABC Studios, New York, N. Y., Columbia Broadcasting System.
KRLD Studios, Dallas, Texas, Columbia Broadcasting System.
WOR Studios, New York, N. Y., Mutual Broadcasting System.
WJSV Studios, Washington, D. C., Columbia Broadcasting System.
WCCO Studios, Minneapolis, Minn., Columbia Broadcasting System.

JOHNS-MANVILLE ACOUSTICAL AND SOUND ABSORPTION MATERIALS

TYPES	FOUNDATION REQUIRED	SIZE OF UNITS	SURFACE CONTOUR ADAPTABILITY	CHARACTER OF FINISHED SURFACE	SOUND ABSORBING MEDIUM	FIRE RISK	UPKEEP REQUIRED	MATERIAL THICKNESS	WEIGHT PER SQUARE FOOT	ABSORPTION COEFFICIENT AT 512 CYCLES	NOISE REDUCTION COEFFICIENT **
SANACOUSTIC TILE	NO LIMITATIONS	12"X12" 12"X24" 16"X16"	PLANE SURFACES OR SURFACES OF LARGE RADIUS	ENAMELED PERFORATED STEEL OR ALUMINUM	ROCK WOOL	FIRE RESISTANCE APPROVED BY BUILDING DEPTS. GENERALLY	WASH OR REPAINT	1 9/16"	STEEL 2.5 LB. ALUMINUM 2.0 LB.	.95 A.M.A.	.85
SANACOUSTIC PANELS		30" TO 48" WIDE IN LENGTHS UP TO 14'-0"		DECORATED PERFORATED STEEL OR ALUMINUM				5/8"	STEEL 1.0 LB. ALUMINUM .8 LB.	.67 * A.M.A.	.60
								1 1/8"	STEEL 1.8 LB. ALUMINUM 1.6 LB.	.83 * A.M.A.	.75
								2 1/8"	STEEL 2.8 LB. ALUMINUM 2.6 LB.	.84 * A.M.A.	.80
SANACOUSTIC HOLORIB FOR INTERIORS		22" WIDE IN LENGTHS UP TO 12'-0"						2"	2.7 LB.	.87 A.M.A.	.80
SANACOUSTIC HOLORIB FOR ROOFS	STEEL PURLINS SPACED UP TO 8'-6" C-C	18 1/2" WIDE IN LENGTHS SUITABLE TO PURLIN SPACING		ENAMELED PERFORATED STEEL				2 7/8"	6.7 LB. (COMPLETE ROOF UNIT)	.72 J-M	.65
TRANSITE ACOUSTICAL TILE	NO LIMITATIONS	12"X12"		DECORATED PERFORATED TRANSITE				1 1/8"	2.25 LB.	.71 A.M.A.	.70
TRANSITE ACOUSTICAL PANELS		12"X12" 12"X24" 24"X24" 24"X48"						11/16"	1.9 LB.	.67 * A.M.A.	.60
								1 3/16"	2.7 LB.	.83 * A.M.A.	.75
								2 3/16"	3.7 LB.	.84 * A.M.A.	.80
ROCKOUSTILE TYPE A	BROWN OR PUTTY COAT OF PLASTER FLOATED SMOOTH. CONCRETE WITH LEVELING COAT OF PLASTER OR CEMENT. WOOD SHEATHING, PLASTER BOARD, FLAT SHEET STEEL, ON WOOD STUDS OR JOISTS 12"-16"-18" CENTERS	6"X12" 12"X12" 12"X24"	NO LIMITATIONS	NATURAL (IRIDESCENT GOLDEN ECRU) OR PAINTED	MINERAL AGGREGATE			1"	1.1 LB.	.66 A.M.A.	.60
ROCK WOOL ACOUSTICAL TILE		12"X12"		PAINTED	ROCK WOOL		REPAINT WITH SPRAY	1"	1.43 LB.	.66 A.M.A.	.70
NASHKOTE TYPE A1S		NO LIMIT		PAINTED SAND FINISH PLASTER			WASH OR REPAINT	1/2" 3/4" 1"	8 OZ. 11 OZ. 14 OZ.	.31 .38 .46 R.L.	.30 .35 .40
NASHKOTE TYPE B 332				PERFORATED OIL CLOTH	ASBESTOS AKOUSTIKOS FELT			1/2" 3/4" 1"	8 OZ. 11 OZ. 14 OZ.	.43 .53 .67 R.L.	.50 .55 .60
NASHKOTE TYPE C				SIZED FELT			WASH OR REPAINT WITH SPRAY	1/2" 3/4"	7 OZ. 10 OZ.	.31 .42 R.L.	.40 .50
NASHKOTE TYPE F				BURLAP, REP, BROCADE, AWNING CLOTH OR ANY DYED FABRIC			VACUUM OR DRY CLEAN	1/2" 3/4" 1" 1 1/2" 2" 3"	8 OZ. 11 OZ. 14 OZ. 21 OZ. 28 OZ. 42 OZ.	.35 .49 .65 .72 .76 .77 R.L.	.40 .50 .60 .60 .65 .65

*Absorption coefficient of sound-absorbing element.

**The noise reduction coefficient is the average of the coefficients at frequencies from 256 to 2048 cycles, inclusive, given to the nearest 5%. This coefficient is recommended for use in comparing materials for noise quieting purposes, as in offices, hospitals, banks, corridors, etc. For auditorium treatment, attention should be directed to the coefficients at 512 cycles and other frequencies.

A.M.A.—The Acoustical Materials Association. R.L.—Riverbank Laboratories. J-M—Johns-Manville Laboratory.

Specifications

Johns-Manville will be glad to furnish detailed recommendations and specifications covering any problem of acoustical correction, noise control, or sound isolation. Satisfactory and efficient installation is assured by the Johns-Manville organization and its approved Acoustical Contractors. Contract prices for applied sound control work may be obtained from any Johns-Manville office.

KEASBEY & MATTISON COMPANY

AMBLER, PA.

SALES OFFICES IN PRINCIPAL CITIES

K&M

Calicel

(1) Industrial and Home Insulation.
(2) Acoustical Tile.
(3) Acoustical Plaster.
(4) Sound Deadening.
(5) Calistone Roof Slabs.
(6) Insulating Concrete Aggregate.
(7) Refractory Insulation.
(8) Pulverized Fillers.

For Data on Other Products, See File Index

CALICEL ACOUSTICAL TILE—CERAMIC

"The Permanent Acoustic"

Recognizing the growing importance of acoustics in the architectural and building field of today the Keasbey & Mattison Company are adding Calicel products to their many high quality and up to date items in this field.

To supplement the organization of The Calicel Company, who formerly produced and marketed all Calicel products, Keasbey & Mattison Company have added its own experience and technical organization to provide the most complete line of acoustical products available.

Calicel Acoustical Tile was developed to meet a specification—one such as any architect might prepare having the best interest of his client in mind. It has been widely used for a period of five years, even the earliest installations being free from development of any structural difficulties. Neither has any dissatisfaction over absorption quality appeared.

Calicel Acoustical Tile express rare beauty, embodying surprising flexibility of natural colors and textures; also decorative coloring effects with comparatively everlasting or renewable flat and glossy lacquers, oil paints and bronzes in single and two-tones and polychromes; maintaining under these conditions full acoustical and sound absorbing qualities necessary for complete sound control.

Add to these, abrasive and wearing strength which permits wall and wainscot acoustical treatment even as low as the base; permanent natural fireproofness and waterproofness, the former assuring of eventual low fire insurance rates and the latter permitting Calicel to be completely saturated with moisture for long periods of time without expansion, contraction, buckling or disintegration; permanent acoustical treatment for steam kitchens, baths, showers, and swimming pool rooms.

Calicel Acoustical Tile have been subjected to almost every conceivable and practical test pertaining to water and fire, such as installation in dry kilns and ventilating ducts with alternating high and low degrees of relative humidity; alternate complete water immersion and kiln drying over periods of six months and more—all without visible, physical change from its original qualities.

Natural colors in clear fields and balanced or unevenly blended combinations of warm white, faint buff, golden and dark brown, and black, with fine smooth textures or irregular coarse textures. The particles in Calicel Acoustical Tile comprise uncountable minute cells with mirror-like walls so that very often panels of this material mildly reflect surrounding colors—chameleon-like.

For utmost sanitation in hospitals, kitchens, laboratories, nurseries, etc., two coats of highly glazed lacquer or oil paint will maintain its finish for a period of from seven to fifteen years, permitting frequent washing and cleaning. Authoritative laboratory reports have established the possibility of redecorating many times without appreciable decrease in sound absorbing value.

Many architects use Calicel Acoustical Tile as decoration at a very reasonable price, at the same time providing full acoustical treatment without cost. As a decorative wall treatment, Calicel is to be compared only with the finest of marbles, Caen stones and travertines.

View of Waiting Room in New Pennsylvania R. R. Station, Newark, N. J.
McKim, Meade & White, Architects
Natural and colored, plain and ornamental Calistone walls and ceilings

Distribution

Calicel Sound Absorbing and Sound Insulating products are distributed by Keasbey & Mattison Company, Ambler, Pa., who maintain direct sales offices or approved contractors in all principal cities.

Installation is made by or under the direct supervision of these representatives.

PHYSICAL CHARACTERISTICS

Material and Manufacture

Calicel, basically, is a highly expanded stone. It is a cellular mineral, a refractory insulator, a synthetic combined silicate of lime and alumina formed at temperatures in excess of 2000° F., being so cooled that the molten mass is expanded from 10 to 40 volumes. This highly cellular structure somewhat resembles a petrified sponge. Subsequent refining and grading operations produce finished Calicel which serves as an aggregate for Calicel Acoustical Materials as well as for numerous thermal insulators.

This Calicel Aggregate is carefully graded for size and color, thus making possible a wide variation of natural colors and textures in the finished product.

The actual production of Calicel Acoustical Tile is like that of any standard floor or wainscot tile in that the aggregate is thoroughly mixed with a time-tried mineral bonding agent, then moulded with hydraulic presses, after which it is cured or dried in kilns. The basic materials and consequently Calicel Acoustical Tiles are as permanent and renewable as any standard building material.

Acoustical Absorption

Calicel Tile are manufactured in a modern new plant devoted exclusively to the product—each operation being as near automatic as possible and under perfect control which, together with the nature of the material, assures consistent absorption.

Absorption tests made on commercial type materials by the Laboratories of the Acoustical Materials Association have resulted in the following coefficients of absorption:

Material	Thickness Mounting		Coefficients 256	512	1024	2048	*Noise Reducing Coefficient
K & M Calicel	¾"	† 1	.22	.55	.97	.77	.65
K & M Calicel	1"	† 1	.23	.63	.79	.94	.65
K & M Calicel	1"	* 7	.81	.83	.76	.71	.80

(†Cemented to backing. *Mounted similar to Ambler Olsen System.)

Through varying the composition of Calicel Tile and the method of its application it is possible to secure peak absorption at the lowest frequencies as well as the highest.

Standard Sizes

6x6, 6x12, 12x12, 8x16, 16x16, 12x24 in. permitting a wide variation in center, border, herringbone and geometric design.

Standard Architectural Types (All Sizes)

Commercial Tile—Both fine or coarse textures in natural light ivory shades either evenly graded for color or slightly variegated.

Sanitary or Light Diffusing—Both fine or coarse textures heavily lacquered or painted, color to suit. Stenciled if desired. Highly washable.

Spanish or Tapestry Tile—A sprinkling of natural dark golden reddish brown, and black colored particles on a coarse texture ivory field.

Early Italian Tile—A sprinkling of natural dark golden reddish brown, and black colored particles on a fine texture ivory field.

Multichrome Tile—Remarkably beautiful, quiet or theatrical effects, in all colors secured by using stains or bronzes in relief on extra heavy lacquers. All textures. High abrasive strength and washable.

Monumental Tile—Varying blends of black on white or ivory fields, resulting in fine or coarse texture greys. Also Bedford stone finish in white, grey and buff.

Special Sizes, Thicknesses, Textures and Colors

Unusual freedom is possible to the designer in adapting Calicel for special patterns and motifs. Masonry or Monumental type tile can be had in sizes up to approximately 6 ft. for the larger dimension.

Moulded Types

Calicel aggregates may be moulded into desired forms for use with Calicel Acoustical Tile, carrying the same textures, color and finish. Estimates and samples on request.

ADAPTABILITY—DISTINCTIVE QUALITIES

Application

Four different methods of application are suggested, namely:

1. Cemented direct to plaster or other masonry or to wall or plasterboard, with a plastic, heat-resisting, moisture proof cement.
2. Supported mechanically by a system of special metal members—whereby lath and plaster may be eliminated (see page 3).
3. Screwed or nailed direct to furring strips.
4. Jointed and anchored to masonry backing identical to Bedford or other stone.

Decoration

When glosses are desired, Calicel is customarily lacquered—in all colors, without noticeable loss of absorption. Lacquers are preferred, principally due to their longevity or permanence—from seven to fifteen years. Dyes may be used without effect, but practically all fade easily.

Oil and cold water paints may be used also, without noticeable effect provided they are properly applied.

Substantiating reports prepared by authoritative laboratories indicating non-loss of absorption through application of many coats of brush applied oil paints will be furnished on request.

Cleanability

The cleaning of the natural or unlacquered tile is quite simple and effective due to the fact that there seems to be no "breathing" to the tile. This means that dust and dirt does not penetrate but collects on the surface only, thus permitting of easy cleaning by sponging with commercial wallpaper cleaner.

A report regarding this, prepared by Prof. Peebles, of Armour institute, will be forwarded upon request.

Fire Test

Columbia University, New York, exposed Calicel Acoustical Tile to a direct flame for forty minutes, the temperature on the flame side being 1720 degrees F. and on the other side only 184 degrees F., showing high heat insulating value. When flame was removed, water was applied to the specimen with no visible change in surface.

Cost

Calicel acoustical treatment is no more expensive than ordinary types. Even specially prepared orders are moderately priced.

Light Reflection

Since the light reflection of acoustical tile depends entirely upon the smoothness of the surface plus the lack of large, open areas such as mechanical perforations produce, it is natural that high light reflection values are had. Authoritative reports upon request.

Regarding Permanency

Calicel Tile being entirely mineral are absolutely permanent.

Auditorium, Rufus King High School, Milwaukee, Wis.
Calistone Side Walls

MASTER SPECIFICATIONS—CALICEL ACOUSTICAL TILE OR WALL STONE

Where shown on plans or schedules or hereinafter specified Calicel Acoustical Tile (or Wall Stone) as manufactured by KEASBEY & MATTISON COMPANY, Ambler, Pa., shall be applied to ceilings and/or sidewalls.

Tile shall be (specify) shade and texture (specify) it shall have absorption of not less than (specify) per sq. ft. Size of tile and pattern shall be (specify) (as shown in detail drawings).

Installation is to be made in the following manner:

1. Tile are to be cemented directly to the base consisting of (specify) (whether plaster, concrete, plaster- or wall-board, etc.) in an approved manner with a heat-resisting, moisture proof cement, as approved by the manufacturer.

2. Tile are to be nailed or screwed directly to furring strips as furnished by others, furring strips being not less than 1x2 in. in size and made of soft wood, located (12 or 16 in.) on centers, having bearing points not more than 24 in. on centers.

3. Tile are to be supported mechanically on metal shapes attached to tee irons or channels furnished in place by others and spaced not more than four feet on centers, channels adjacent to walls being placed within 12 in. of same.

4. Tile or wallstones are to be set with bed and vertical joints of stainless cement mortar ¼-in. thick and anchored to structural backing in a manner approved by manufacturer.

Painting

Paint or lacquer of an approved color shall be applied previous to shipment or after erection as per manufacturer's instructions.

SOUND INSULATION AND CALICEL ACOUSTICAL PLASTER

Calicel High Efficiency Acoustical Casting Plaster

Certain selected Calicel aggregates dominate in acoustical and sound absorbing values when used as an aggregate for plaster. The acoustical field has developed a definite use and a demand for a highly efficient sound absorbing plaster which is fulfilled by Calicel.

Specifications, surveys and special data furnished upon request.

Sound Insulation

Relates only to the transmission of vibrations causing sound through walls, floors and ceilings.

Calicel Sound Fill and Calicel Mastic or Concrete solve almost all sound insulation or sound proofing problems at very moderate cost, *without the use of eccentric and freakish construction details.*

Present installations comprise apartments, commercial buildings, a major broadcasting studio, band practice rooms, etc. A recent installation of 4 in. thick Calicel Sound Fill partitions between an orchestra practice room, small studios, and adjoining offices recorded a measured lowering of intensity of 75 decibels.

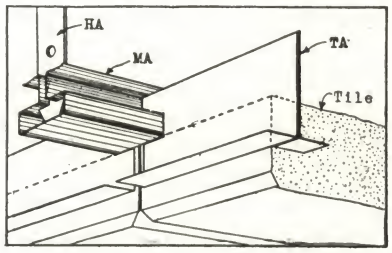
The manufacturer maintains a complete engineering service for consultation with architects regarding this art.

Cast Plaque by Jacobson & Co., New York, N. Y.

KEASBEY & MATTISON CO. AMBLER-OLSEN SYSTEM

The Ambler-Olsen System, a modern method of ceiling, wall and partition construction, offers a positive attachment for acoustical treatment and when used in new construction permits the acquiring of such treatment at little or no cost over that of suspended lath and plaster ceiling.

It has many advantages as a method of applying this treatment:



(a) Salvage of materials in event of partition or other changes.

(b) Accessibility to mechanical features above.

(c) Appreciable increase in sound absorption of the acoustical material.

This system is equally well adapted to all types of construction, existing or new.

Acoustical Tile Installation

A T-shaped member (TA) is suspended by its notched ends from the parallel moulding runners (MA). The tile is grooved to fit the T-member.

Double Partitions (Sound Deadening)

Double partitions made up of standard Ambler-Olsen members in which is placed Calicel Sound Fill makes an inexpensive sound proof partition which will produce the results mentioned above.

(Complete details and specifications on request)

A FEW INSTALLATIONS OF CALICEL ACOUSTICAL TILE

Geo. Washington National Masonic Memorial, Alexandria, Va.
City Hall and Court House, St. Paul, Minn.
KMOX Broadcasting Studios, St. Louis, Mo.
United States War Dept., Sixteen Theatres
Church of St. Sabinas, Chicago, Ill.
United States Treasury Dept., Eight Post Offices
Rufus King High School, Milwaukee, Wis.
Milwaukee Hospital, Milwaukee, Wis.
Indiana State Library, Indianapolis, Ind.
Boy Scouts of America Headquarters, New York City
Crane Company, New York City
Pennsylvania Railroad Station, Newark, N. J.
Broad St. Building, P. R. R. Co., Philadelphia, Pa.
Pennsylvania and Reading R. R. Station, Atlantic City, N. J.
New York Central Station, Syracuse, N. Y.
Glenville Hospital, Cleveland, Ohio
Greenpoint Hospital, Brooklyn, N. Y.
Robert Packer Memorial Hospital, Sayre, Pa.
Carter Carburetor Corp. Offices, St. Louis, Mo.
The Perfect Circle Co., Hagerstown, Ind.
U. S. Tobacco Co., Rockefeller Center, N. Y. C.
Offices, Tennessee Eastman Corp., Kingsport, Tenn.
Federal Warehouse Extension, Washington, D. C.
Cafe Mayan, International Bldg., Radio City, N. Y. C.
Hotel Victoria Restaurant & Grill, N. Y. C.
Cafeteria, Procter & Gamble, Cincinnati, Ohio
Dining Room & Grill, Manchester Hotel, Middletown, Ohio
New Banquet Room, Parker House, Boston, Mass.
Fox Theatres, Inc., Ten Theatres
Warner Brothers, Five Theatres
R.K.O. Theatres, Three Theatres
Benedictine Chapel, Mundelein, Ill.
Municipal Auditorium, Milwaukee, Wis.
Ball Teachers College, Muncie, Ind.
Rochester State Hospital, Rochester, N. Y.
Pillsbury Flour Mills Co., New York City, N. Y.

THE R. C. MAHON COMPANY

Manufacturers of Acoustical Ceilings and Roof Decks

DETROIT, MICH.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

MAHON

Product

MAHON ACOUSTICAL CEILINGS.

For Mahon Steel Roof Deck, Rolling Steel Doors and Shutters, Kalamein and Tin Clad Doors, and Cast Iron Roof Sumps, see File Index.

Mahon Acoustical Ceilings

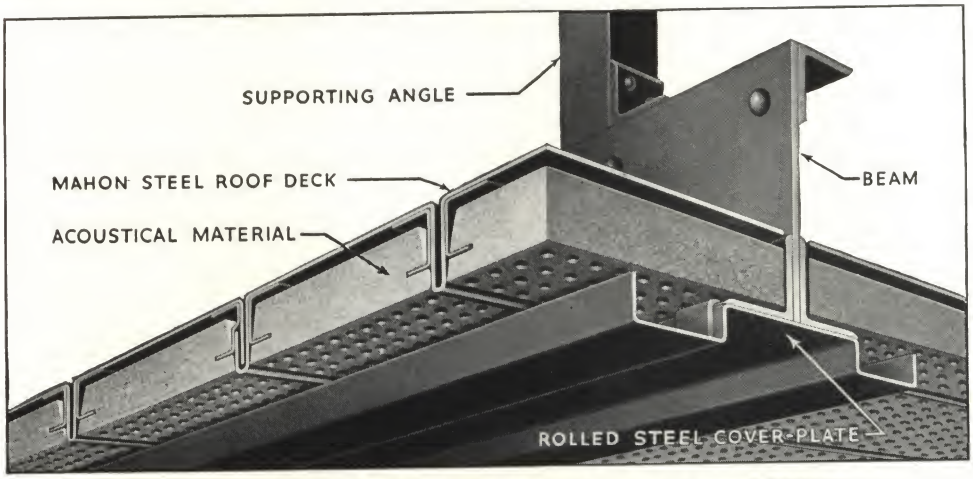
Mahon Suspended Acoustical Ceiling is simple in design and has proved very effective in every type of building where acoustical treatment is desirable.

The acoustical material can be furnished in various thicknesses up to 1¼ inches. This material is perforated to within ⅛ in. of its entire thickness, with ¼ in. holes spaced $\frac{17}{32}$ in. center to center, to provide maximum sound absorption. It is supported by steel plates with stiffening ribs placed 6 in. center to center. The cross section view on this page illustrates the simplicity of erection.

Laboratory tests prove this type of acoustical ceiling to be from 48% to 84% efficient—depending upon the thickness of the acoustical material used.

Mahon Acoustical Ceilings can be painted if desired and provide a very attractive as well as effective acoustically treated ceiling for auditoriums, arenas, drill halls, etc.

Mahon Steel Roof Deck insulated and acoustically treated in the same manner, can also be furnished for use where suspended ceilings are too costly.



Cross Section Showing Construction of Mahon Acoustical Suspended Ceiling

Mahon Acoustical Suspended Ceiling Installed in the Grand Rapids Civic Auditorium, Grand Rapids, Mich.

IRVING HAMLIN

PATENTEE AND MANUFACTURER

The Evanston Sound Proof Door

TELEPHONE
Greenleaf 1975

1500 Lincoln Street, EVANSTON, ILL.

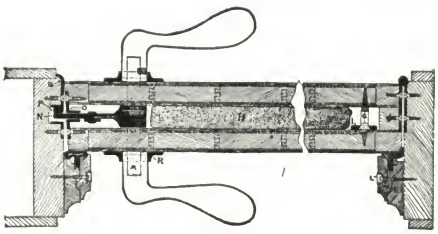
Products

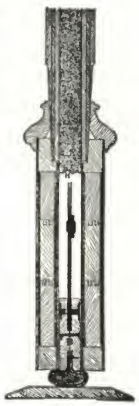
Doors for Retarding Transmission of Sound.
The Evanston Sound Proof Door—one door to an opening.
The "Special" and "High Duty" Doors for radio broadcasting studios and the more exacting acoustical situations.
Hamlin's Combined Sound Proof and X-Ray Proof Door.
Hamlin's Double Doors—two doors to an opening.
Hamlin Sound Proof Sliding Doors—where swinging doors are not desired.
The Hamlinized Folding Partitions—many doors to an opening.

EVANSTON SOUND PROOF DOOR

Construction—A sectional door containing sound-deadening and fireproofing elements and a mechanism for hermetically sealing the cracks at top, bottom and two sides. The space between sections is ⅞ in., the insulation almost filling the space; but leaving some degree of "flappiness" and freedom of contact, thus avoiding "bridging." It extends almost the entire area of the door, as illustrated, and is composed of two sheets of asbestos mill-board, with sheet steel suspended between them. Neither vegetable or animal quilting, nor asbestos "paper" are used. Part of the insulation is fastened to one section, and part to the other.

The mechanism which connects the handle with the movable cushion at the floor, and simultaneously wedging the door into its seat against the felt-mounted stops, is of steel, massive and strong, the pivotal connections being rivets and not bolts. The movable cushion at the bottom is of one inch or more cross section, same mushrooming under strong leverage by direct action upon the handle into a cross section ½x1½ in., as shown. There are no springs, and nothing automatic whatever about this door. This means that in over twenty years of business, and with thousands of the doors in use, no income has accrued from repairs or replacement of parts.





Ordinary doors shrink and swell. This door retains its virtues during winter and summer variations because it is purposely trimmed small enough so it will never stick in the frame, while the stops (one inch thick and mounted with a generous fold of felt) at all times fill the cracks. The raised threshold shown is not necessary.

In the visible hardware there is no unsightly duplication or triplication of latching devices. In this door only one latch is necessary.

Made in any style of flush or panel. Each section is ⅞ in. thick, being a completely built-up core and veneer door. Panel doors have ⅛-in. veneers, while the flush are done in cross-banded veneers. Your own jambs are usable, but they should be strong and sturdy, and provided with three 5x5 butts. Jambs, for best appearance, ought to be at least 5½ in. across the face, flat and without rabbets, so as to accommodate the thick door and the felt-mounted stops. However, narrower stops, and even thinner doors can be furnished, if conditions so require.

Doors can be paired for openings up to 8 ft. wide. Sliding doors are furnished, either vertical or horizontal. Also doors combining X-ray-proofing with this self-same fireproofing and soundproofing. Metal covered doors also are furnished which, with the internal insulation described, offer very great protection from fire.

Send for the fully illustrated catalog. The illustrations show the door in cross section, with internal insulation of hair felt that has been discarded in favor of asbestos millboard and sheet steel in various combinations of thickness and alteration. This is because acoustical engineers now know that mere mass and weight of the materials is a very important factor in retarding sound. The door as now offered is therefore of much higher efficiency than formerly.

For making estimates please state number and size of doors of each kind, the kind of wood, and indication of panels and moulding.

The Sub-Standard Door

Thickness 2⅝ in., internal space ⅞ in., occupied by hair felt and sheet steel. Weight 6 lbs. per sq. ft. or 123 lbs. exclusive of finish hardware, in a 3x7-ft. door. This for many years was the Standard Door of which thousands are in use and which made the world sound-proof-door-conscious.

The Standard Door

Thickness 2⅝ in., internal space ⅞ in., occupied by one thickness each of ¼ and ⅜-in. asbestos millboard and one sheet of 28-gauge steel. It will average 9 lbs. per sq. ft. or 175 lbs., exclusive of finish hardware, in a 3x7-ft. door. It was not tested, but estimated by the Director of Riverbank Laboratory to be of 32 decibels retardation.

The Special Door

Thickness 3 in., internal space 1¼ in., occupied by asbestos millboard and sheet steel. It weighs 11.6 lbs. per sq. ft. or 243 lbs. exclusive of the finish hardware in a 3x7-ft. door, and tested 35.6 decibels retardation at the Riverbank Laboratories.

The High Duty Door

Thickness 3 in., internal space 1¼ in., occupied by two sheets of $\frac{1}{16}$-in. lead, two sheets of ¼-in. and one sheet of ⅜-in. asbestos millboard. It weighs 15.6 lbs. per sq. ft. or 326 lbs. exclusive of finish hardware, in a 3x7-ft. door.

In case of peepholes or glass panels, the glass is double in the Sub-Standard and the Standard Doors, and triple in the Special and High Duty Doors.

The Special and High Duty Doors at their hinge edges, besides the felt-mounted stops, are armed with a strip of thick felt 2 in. wide, partly embedded in the door, and under compression when door is closed.

Higher duty still may be accomplished, as there is ample room internally for heavier insulation.

THE HAMLINIZED FOLDING PARTITIONS

"Hamlinized" here means the sound-proofing principles of the Evanston Sound Proof Door applied to the common well-known kinds of folding doors. The common well-known kinds are acoustically atrocious. Many architects refuse them with scorn, and rightly so. In the Hamlinized Folding Partition will be found the very ultimate in sound-proofing and in smooth operation. The sliding-folding hardware is that of the Topping Manufacturing Company's "Easyfold." It was selected, after two trials of an inferior kind, because of evident superiority in design and execution over all others.

Extreme thoroughness of sound-proofing of the doors composing a folding partition is imperative if the compartments created by such partition are designed for music, lectures, etc. If one buys a sound-proof door for an opening 3x7 ft., there are 20 lin. ft. of cracks and 21 sq. ft. of vibratory surface concerned. In a folding partition, say of eight doors 3x9 ft., there are 129 lin. ft. of cracks and 216 sq. ft. of vibratory surface.

The wisdom of going to the utmost extreme in sound-proofing devices is therefore apparent. Anything short of thoroughness of the Hamlinized is unwise.

Complete drawings are available. The doors are 3 in. thick, invariably suspended from above and guided at the floor. Doors are hinged and folded in pairs, each pair sliding to the wall independently of the others. However, they can be arranged in the "accordion door" manner if necessary.

Send for the Folding Partition Catalogue.

HORN FOLDING PARTITION CO.

Soundproof Doors—Selfold Partitions—Selfold Bleachers

MAIN OFFICE AND FACTORY

FORT DODGE, IOWA

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DENVER, COLO.
DETROIT, MICH.
FARGO, N. D.
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SCRANTON, PA.
ST. LOUIS, MO.
ST. PAUL, MINN.
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SIOUX FALLS, S. D.
SYRACUSE, N. Y.
WASHINGTON, D. C.

Should you find it difficult to reach our representatives in your territory, write or wire direct to our FORT DODGE OFFICE

For our pages on Folding Partitions and Folding Bleachers, see File Index

SOUNDPROOF DOORS

For Hospitals, Music Studios, Offices, Radio Stations, Theatres, Churches, Private Homes, Funeral Parlors

Horn Soundproof Doors were developed for use where absolute sound isolation is necessary. They are furnished in three types: Heavy Duty, Standard and Special.

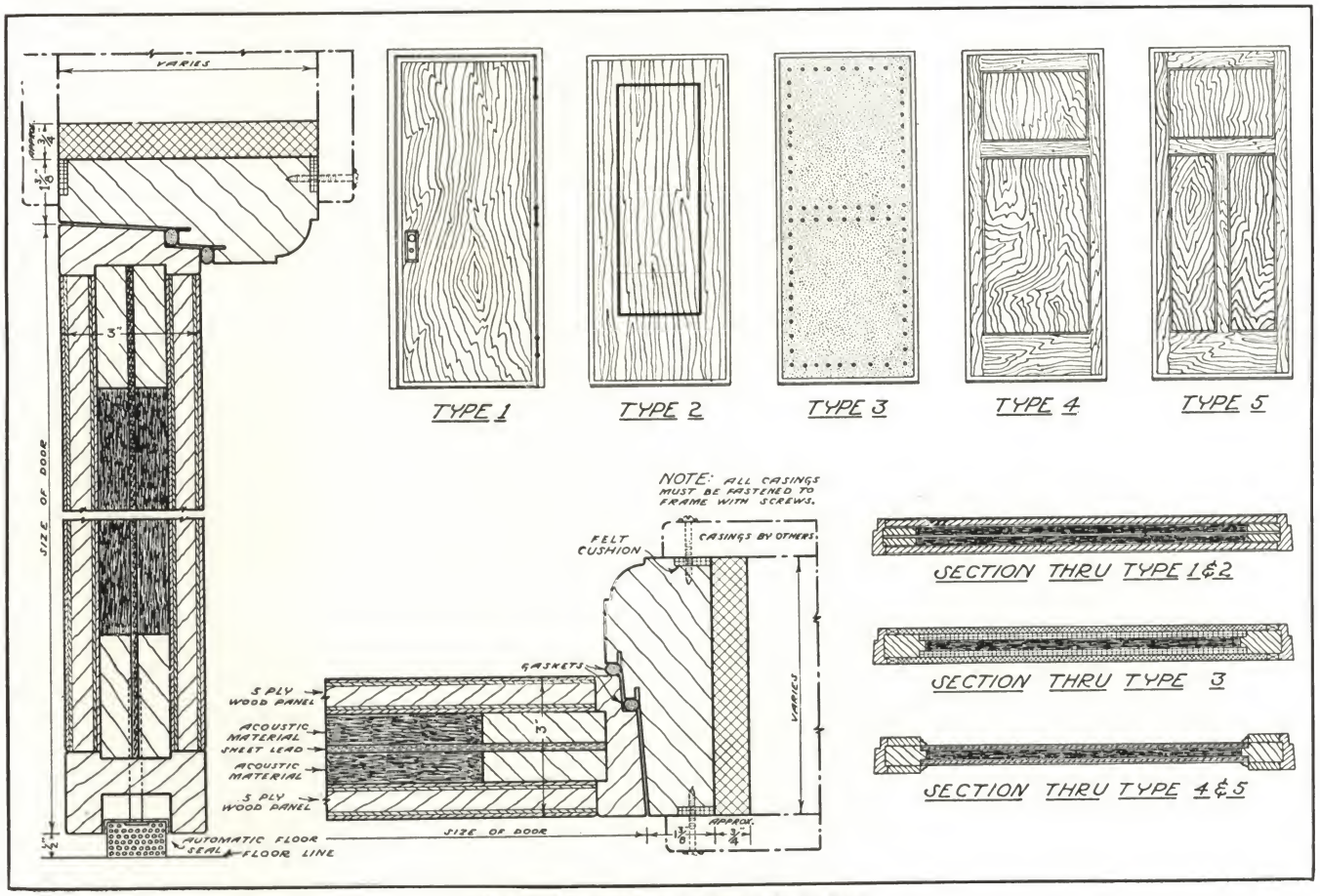
The Heavy Duty type is 3 in. thick, made of two sections, each being $1\frac{7}{16}$ in. thick, separated with $\frac{1}{8}$ in. sheet lead. Standard type is same as Heavy Duty but sheet lead is omitted. Special type is $2\frac{1}{4}$ in. thick. Any style of door construction may be obtained in the above types.

For most cases the Standard type is found to be satisfactory, the Heavy Duty being furnished only in extreme cases. Fully automatic floor seals are furnished with all doors. It is recommended that the doors be furnished complete with jambs and hardware. They are then fitted at the factory and the entire unit is inserted in the rough openings. This insures best results.

Hardware is furnished only when jambs are included. When jambs are not furnished, a special stop is furnished with the door. There are no size limitations and styles and designs are unlimited. Door checks are not included unless specified.

Specification

The Soundproof Doors as shown on plans shall be as manufactured by the Horn Folding Partition Co. Doors shall be (Standard, for example), Design No..... Complete doors shall include jambs and hardware (unless otherwise specified). Provide fully automatic floor seals and double gaskets at all joints. Doors must be prefitted at factory, ready for installation in the building.



DETAILS OF HORN SOUNDPROOF DOORS

THE ROBERT MITCHELL MFG. CO.

Manufacturers of Cabinet Woodwork and Elevator Cabs

CINCINNATI, OHIO

SALES OFFICES

BOSTON, 137 Newbury St.
NEW YORK, 30 Rockefeller Plaza, Room 1216
PHILADELPHIA, Architects Bldg.
BALTIMORE, 514 St. Paul Ave.
WASHINGTON, D. C., 1427 Eye St. N. W.
ATLANTA, 101 Marietta Bldg.
NORFOLK, 808 W. Oceanview Ave.
PITTSBURGH, 406 Nixon Bldg.
COLUMBUS, 50 E. Broad St.
CLEVELAND, 1740 E. 12th St.
DETROIT, 802 Owen Bldg.
CHICAGO, 650 Arlington Pl.
ST. LOUIS, Chemical Bldg.
DALLAS, P. O. Box 295
LOS ANGELES, 7470 Santa Monica Blvd.

PRODUCTS

(As Formerly Manufactured by The Compound and Pyrono Door Co.)

COMPOUND
Key-Veneered Doors

PYRONO
Fireproof Wood Doors and Trim

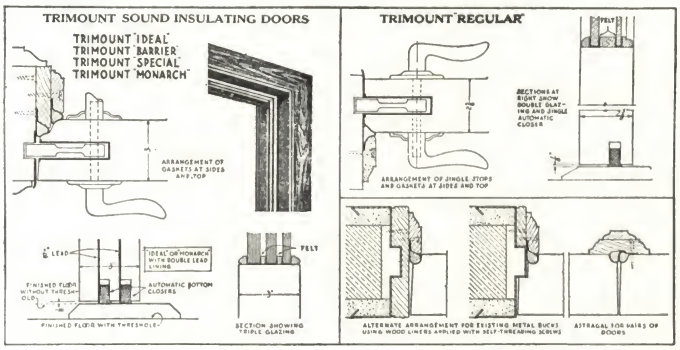
TRIMOUNT
Soundproof Doors

TRIMOUNT SOUND INSULATING DOORS

The Trimount doors can be built to any conventional or special design and veneered with any wood. For the selection of the proper door we list below the five standard types we manufacture, with the specifications of each. In general it will be found that the simple requirements of doctors' or executive offices, residential and churches, etc., can be met with Trimount "Regular" or the Trimount "Barrier." The lead lined Trimount "Ideal" is correct for broadcasting studios, music studios, laboratories, or other locations where highest efficiency is imperative. The Trimount "Special" and Trimount "Monarch" need only be considered where conditions require very heavy built-up three-point hardware.

Trimount "Regular"	Trimount "Barrier"	Trimount "Special"	Trimount "Ideal" Lead Lined	Trimount "Monarch" Lead Lined
Turnbuckle hardware Single gaskets Single bottom closer Thickness 2⅝ in. Average weight, 140 lb. Average attenuation 33.30 db.	Turnbuckle hardware Double gaskets Double bottom closer Thickness 3 in. Average weight 160 lb. Avg. attenuation 35.46 db.	3-point built-in hardware Double gaskets Double bottom closers Thickness 3 in. Average weight 175 lb. Avg. attenuation 35.63 db.	Turnbuckle hardware Double bottom closers Double gaskets thickness 3 in. Average weight 320 lb. Average attenuation 39.85 db.	3-point built-in hardware Double bottom closers Double gaskets thickness 3 in. Average weight 335 lb. Average attenuation 40.02 db.

Types — Trimount Sound Insulating Doors may be arranged for glazing with double or triple lines of plate glass (of varying thickness to obtain best insulating results) or may be fireproofed by the Pyrono process. They may be hung in the usual manner in wood frames or in metal frames. If metal frames are used, self-threading screws are furnished for attaching stops so that no tapping for screws is necessary. Doors may be prime coated or finished complete when desired.



Construction—All Trimount Sound Insulating Doors are built up of two separate doors held apart by a marginal frame providing a space filled with acoustic material set as a baffle flanked by air space. The edges of the doors are rabbetted with a contour which accommodates the gaskets making possible a wide area of contact between door and gasket.

Equipment—All types, except the "Regular," are equipped with a double line of resilient gaskets set in special stops, surrounding the door at top and sides, and bottom is sealed with two self-leveling automatically operated felt strips set in galvanized steel channels. The Trimount "Regular" has a single line of gaskets and single bottom closer.

Hardware—Trimount "Ideal," "Barrier" and "Regular" are equipped with single contact turnbuckle type of latch sets operated with lever handles on a wedge principle which draw the doors tightly into their gaskets. These latches are furnished with the doors but applied by the erector.

Trimount "Special" and "Monarch" are equipped with heavy duty three-point contact hardware built into the doors and operated by lever handles which throw beveled bolts into strike plates at the top, the side and the bottom of the opening. This hardware is for special purposes requiring extraordinary strength and durability.

A third type of hardware equipment can be provided to automatically close the door with a special floor check and latch set made to operate noiselessly for broadcasting studios. This automatic hardware can be provided for any trimount door.

(*Note:* The ordinary overhead type of door check will not operate Trimount doors satisfactorily against the resistance of gaskets.)

Information Required for Estimate—State definitely the type of door, using trade name or describe the sound insulating conditions to be met; design of door, bearing in mind that flush doors are slightly more efficient than paneled doors; size of openings; kind of wood for face veneer; swing of door; width of jambs. If fireproofing by Pyrono process is desired, so state. If glass openings are required, state size of openings. If automatic operation of the door with floor checks, or if cylinder locks in combination with latch set is required, so state. If doors are to be hung in existing metal bucks see suggested details and state which treatment is selected for jamb lining.

Some Recent Installations of Trimount Sound Insulating Doors

National Broadcasting Co. Studios, Merchandise Mart, Chicago, Ill.—Graham, Anderson, Probst & White
Crosley Radio Broadcasting Studios, Cincinnati, Ohio—Samuel Hannaford & Sons
National Broadcasting Co. Studios, New York, N. Y.—NBC Engineers
Columbia Broadcasting System Studios, Washington, D. C.—CBS Engineers
Lakeside Hospital, Cleveland, Ohio—Coolidge, Shepley, Bulfinch & Abbott
Civic Opera Building, Chicago, Ill.—Graham, Anderson, Probst & White
John Hopkins Hospital, Baltimore, Md.
Dupont Residence, Montchanin, Del.—E. W. Martin

RIVERBANK INSULATING DOOR CO.

Riverbank Laboratories

GENEVA, ILL.

RIVERBANK SOUND-INSULATING DOORS

A Higher Degree of Sound Insulation

This door embodies results of extensive research by Dr. Paul E. Sabine at the RIVERBANK LABORATORIES, Geneva, Ill., and is fabricated in the plant of the HARDWOOD PRODUCTS CORPORATION, Neenah, Wis. It is built according to approved modern door construction in order to give a higher degree of sound insulation than has hitherto been obtained even in doors of great weight and thickness—and at much reduced cost.

Appearance and Construction

The Standard Riverbank Sound-Insulating Door is a combination of hardwood stiles and rails with flush veneered wood panels, presenting the appearance of an inlaid flush door. Panel mounting is designed so that vibrations of the panel as a whole are heavily damped and are not transmitted to the opposite face. Segmental vibrations of panels are prevented by internal treatment with inert damping material. Door is 2½ in. thick and weighs less than 7 lbs. per sq. ft. Surfaces may be veneered with any cabinet wood for stain, or in plain birch for paint finish.

Performance: 40 Decibel Reduction

Riverbank Standard Door is scientifically designed to make effective application of well established principles of mechanical damping to sound insulation without the necessity of excessive weight and thickness. The door, hung in usual manner and closed with an ordinary lock set, gives under laboratory tests an average reduction of 40 decibels over the frequency range from 128 to 4000 cycles. A Riverbank "Special" Door giving even higher attenuation may be designed for locations requiring exceptional treatment.

No Special Hardware Required

Full sound-insulating efficiency of the door construction itself is maintained by stops fitted with gaskets of new and original design. This makes an airtight seal of clearance cracks at the sides and top of the door. An automatic bottom closer of new design takes care of the threshold crack. Doors close so easily that special hardware is not required. Doors are hung in the usual manner with any good grade of latch set and three 5x5-in. hinges. The moderate weight of the Riverbank Doors and the single line of gaskets greatly simplify the installation.

An Outstanding Installation at WGN Studios

An installation of 56 Riverbank Doors in the new WGN Broadcasting Studios of the Chicago Tribune has solved nearly every conceivable soundproof door problem met in building construction. This installation included normal single doors, huge double doors, double exit doors in pairs, specially covered doors, and vertically sliding doors.

Architects' Specification

The following specification is suggested:

Soundproof doors, as indicated on the plans, are to be Riverbank Sound-Insulating Doors as furnished by the RIVERBANK INSULATING DOOR CO., Geneva, Ill., or doors of equal sound-insulating efficiency under laboratory test. Doors are to be furnished complete with special stops, stop adjusters, gaskets and automatic bottom closing devices. Doors are to be veneered to correspond with the other woodwork in adjoining spaces.

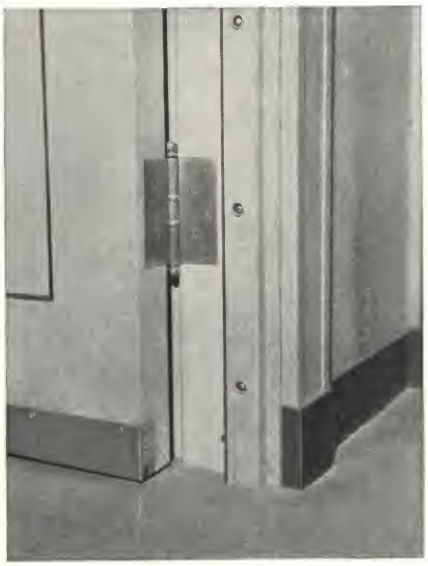
Information Required for Estimating or Ordering

Exact width of opening inside the jamb; exact height of opening from head jamb to threshold (thresholds are recommended as the surest means of obtaining perfect closure at the bottom). Indicate by sketch the swing of each door—either right or left swing; it will assist the Laboratories if a floor plan or rough sketch is included. On this should be indicated the uses of the rooms or spaces on either side of the door.

Treatment of Existing Doors

Much can be done to increase the sound-insulating efficiency of existing doors for physicians' offices, hospitals, hotels, etc., where the expense of new doors may not be warranted. The Laboratories acoustical staff will be glad to study such problems and supply the necessary treatment for existing doors.

At Entrance to Auditorium



Showing Adjustable Stops with Gaskets and Bottom Closing Device

At Entrance to Studio Three

Riverbank Doors in New WGN Broadcasting Studios, Chicago Tribune

ESTABLISHED 1873

THE PHILIP CAREY COMPANY

Manufacturers of Heat Insulation and Asbestos Products

LOCKLAND, CINCINNATI, OHIO

BRANCH OFFICES IN PRINCIPAL CITIES

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DAYTON, OHIO
DETROIT, MICH.
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JACKSONVILLE, FLA.
KANSAS CITY, MO.
KNOXVILLE, TENN.
LOS ANGELES, CAL.
LOUISVILLE, KY.
MEMPHIS, TENN.
MINNEAPOLIS, MINN.
NASHVILLE, TENN.
NEW ORLEANS, LA.
NEW YORK, N. Y.
NORFOLK, VA.
OMAHA, NEBR.
PHILADELPHIA, PA.
PITTSBURGH, PA.
SALT LAKE CITY, UTAH
ST. LOUIS, MO.
SAN FRANCISCO, CAL.
SEATTLE, WASH.
WASHINGTON, D. C.
WHEELING, W. VA.

Products

CAREYCEL is a new, improved, asbestos heat insulation product, in the form of sections for covering pipe; also blocks and sheets for insulating ducts, furnace casings, oven walls, and similar equipment where the temperature does not exceed 300° F. It is designed primarily for insulating heating systems.

Carey PRODUCTS
REGISTERED
TRADE-MARK

No Shrinkage

The elimination of heat shrinkage does away with wasteful and unsightly heat shrinkage cracks so often found is asbestos pipe coverings. Laboratory tests show maximum heat shrinkage of 0.05%.

Sturdier Construction

Illustration shows the compact, laminated structure. This gives more body and greater resistance to damage than is found in the conventional, cellular, Air Cell type of structure.

Smooth Finish

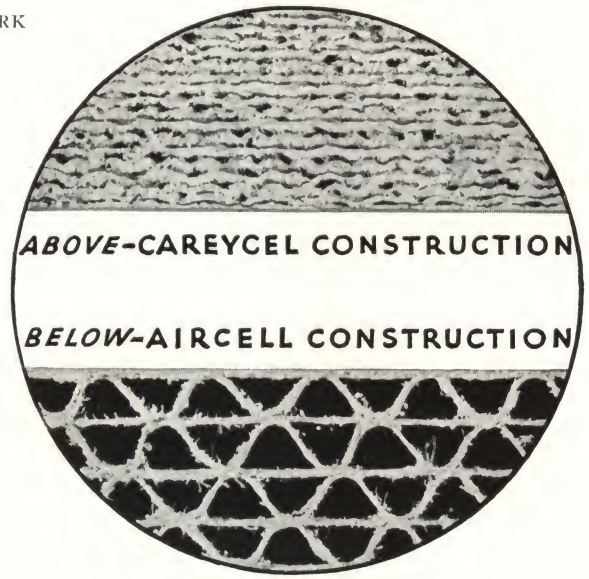
The laminated structure eliminates the ridged, unsightly appearance so often found in inexpensive, low pressure insulation.

Increased Efficiency

The exclusive patent process of "cellizing" the asbestos felt produces innumerable, very small, enclosed air cells, resulting in heat conductivity approximately 30% lower than through the conventional corrugated Air Cell type of structure. See test data (Mellon Institute) in next column.

Low Cost

All the advantages of CAREYCEL are available without a price premium. It sells in the price range of the lowest price cellular asbestos coverings.



THERMAL CONDUCTIVITY

B.t.u. per Hour per Square Foot per ° F. per Inch Thickness

Mean Temperature ° F. ..... / Approximate metal temperature	100° F. / 125° F.	150° F. / 195° F.	200° F. / 260° F.
Careycel	0.377	0.410	0.443
Standard Air Cell (4-ply per inch)....	0.531	0.590	0.650

HEAT INSULATION SPECIFICATIONS

Boilers—Residential—Steam or Hot Water—Cover with 1-in. thick 85% Magnesia Blocks re-enforced with wire mesh and finish with ½-in. thickness Carey No. 100 Hard Finish Asbestos Cement, troweled smooth.

Boilers—Commercial—*Low Pressure Steam*—Cover all steam heated portions of the boiler with 1½-in. thick 85% Magnesia Blocks, firmly wired in place and finished with a ½-in. thick coat of Carey No. 100 Hard Finish Asbestos Cement, reenforced with hexagonal wire mesh, and troweled smooth.

Boilers—Commercial—*Over 100 Lbs.. Steam Pressure*—Cover all boiler drums and drum ends, and other steam heated portions of the boiler with 2-in. thick 85% Magnesia Blocks, firmly wired on and finished with a ½-in. thick coat of Carey No. 100 Hard Finish Asbestos Cement, reenforced with hexagonal wire mesh and troweled smooth.

Boiler Walls—Cover the exposed surfaces of the brick boiler walls with 2-in. thick Carey Hi-Temp No. 12 Blocks, firmly wired in place, and finish with a ½-in. thick coat of Carey No. 100 Hard Finish Asbestos Cement, reenforced with hexagonal wire mesh, and troweled smooth. Apply on boiler water walls sufficient Carey No. 606 Cement to make a smooth surface. Follow with two layers of 2-in. thick 85% Magnesia Blocks, using broken joint construction. Finish with ⅜-in. thick Careystone Panels or ½-in thickness No. 100 Hard Finish Asbestos Cement.

Smoke Flue—Commercial Boilers—*External Insulation*—On flue connections from boiler to smoke stack apply 2-in. thick 85% Magnesia Blocks over either V-rib expanded metal lath or pencil rods to which the Blocks shall be firmly wired. Finish with a ½-in. thick coat of Carey No. 100 Hard Finish Asbestos Cement, reenforced with hexagonal wire mesh, and troweled smooth.

Internal Insulation—To the internal surfaces of smoke flue connections from boiler to smoke stack apply 2-in. thick Carey Hi-Temp No. 12 Blocks, attached to the metal with Carey Fibrous Adhesive, and firmly wired in place. Suitable angle iron clips or stove bolts shall be welded to the inside of the breeching to provide anchorage for the lacing wire, which shall be Nichrome or other suitable, approved heat resisting material. Over the blocks apply two ⅜-in. thick coats of Carey No. 219 Refractory Cement reenforced with hexagonal wire mesh.

Economizer and Air Preheater Ducts—Line with 2½-in. thick Carey Hi-Temp No. 12 Blocks, firmly secured in place. Finish with ¾-in. thick coat Carey No. 219 Cement, applied in two layers, reenforced with expanded metal lath.

Steel Stack Insulation—Insulate the interior of the steel stack with Carey Vitricel Sheets, 2-in. thick, curved to fit the stack diameter. Stack contractor shall apply, on 36½-in. centers for the heighth of the stack, angle iron rings, 1½x1½x$\frac{3}{16}$ in., punched with ¼-in. holes on 12-in. centers in the projecting leg. Vitricel Sheets shall be held in place with suitable clips. All cracks and joints shall be filled and all metal clips shall be covered with Carey No. 219 or other suitable refractory cement.

Boiler Room Ceiling—Insulation shall consist of 2-in. thick 85% Magnesia Blocks, supported by approved sheet metal tee irons, suspended from the main ceiling. Firmly attach expended metal lath to the tee iron members and make a finished ceiling with ½-in. thickness of Carey No. 100 Hard Finish Asbestos Cement, troweled smooth.

Warm Air Ducts Commercial—Cover the fan housing and all warm air ducts with 1-in. thick CAREYCEL Boards, firmly wired in place or attached with sheet metal screws. Seal all cracks and joints with 3-in. wide asbestos paper tape, firmly pasted on. Where duct work is exposed apply an extra layer of deadening felt to make a smooth, even surface, and over this apply 8-oz. canvas stretched tight and smoothly pasted on. Size and finish with two coats of lead and oil paint of colors to be selected.

Warm Air Ducts—Residential—Cover with ½-in. thick CAREYCEL insulation applied and finished as specified for commercial installations.

Tanks, Heaters, Receivers, Traps, Etc.—Cover all such equipment with 85% Magnesia Blocks, firmly wired in place and finished with ½-in. thickness of Carey No. 100 Hard Finish Asbestos Cement, reenforced with hexagonal wire mesh, and troweled smooth. For temperatures under 250° F. use 1-in. thickness blocks; for temperatures above 250° F. use 1½-in. thickness blocks.

PIPING

CONDENSED INSULATION SPECIFICATIONS FOR POWER PLANTS, HEATING SYSTEMS AND PROCESS EQUIPMENT

HIGH TEMPERATURE PIPING INSULATION

Temperature	Recommended Carey Product	Pipe Sizes			
		½" to 1½" inc.	2" to 4½" inc.	5" to 8" inc.	9" and larger
700° F. to 850° F.	Inner Layer: Hi-Temp. No. 12 Outer Layer: 85% Magnesia	2" No outer layer	1¼" minimum 2"	1½" 2"	1½" 2½"
550° F. to 700° F.	Inner Layer: Hi-Temp. No. 12 Outer Layer: 85% Magnesia	1½" No outer layer	1¼" minimum 1½"	1½" 1½"	1½" 2"

STEAM, HOT WATER AND LOW PRESSURE PIPING INSULATION

		½" to 3½" inc.	4" to 10" inc.	12" and larger
450° F. to 550° F.	Carey 85% Magnesia Carey Multi-Ply	2" 2"	Double Std. Thick 2½"	Double Std. 3" Thick 3"
350° F. to 450° F. (120-415 lb. pres.)	Carey 85% Magnesia Carey Multi-Ply	1½" 1½"	Double Std. Thick 2"	Double Std. 3" Thick 2½"
250° F. to 350° F. (30-120 lb. pres.)	Carey 85% Magnesia Carey Multi-Ply	Std. Thick 1"	1½" 1½"	2" 2"
150° F. to 250° F. (Hot Water & Low Pres.)	Carey 85% Magnesia Carey Careycel	Std. Thick 1"	Std. Thick 1"	1½" 1½"

COLD WATER AND MISCELLANEOUS PIPING INSULATION

Cold Water Piping (60° F. and over)	All pipe sizes—Perfecto (Wool Felt) Covering 1" thick To prevent freezing—Double 1" thick Protecto Covering
Ice Water Piping (40° F. to 55° F.)	50° F. and above—Double ½" thick Impervo Under 50° F. —Double ¾" thick Impervo
Roof Leaders, Down-Spouts, Soil and Waste Piping	All pipe sizes—Perfecto (Wool Felt) Covering 1" thick
Brine Piping	From 15° to 32° F., Brine thickness Cork or 2 layers, 1" thick Hair Felt alternated with waterproof paper. From 0° to 15° F., Brine thickness Cork or 3 layers, 1" thick Hair Felt alternated with waterproof paper. From 30° F. to 0° F., special thickness Brine Cork or 4 layers of 1" thick Hair Felt alternated with waterproof paper.

Application—All double layer coverings to have staggered joints, first layer being firmly wired or otherwise secured in place. External finish of covering to be standard pasted canvas jackets and metal bands on 18-in. centers. Canvas to be painted with one coat of cold water paint or sized and painted with two coats of lead and oil paint of color desired. Alternate finish may be 8 oz. canvas applied over building paper with Carey Metal Stitch or hand sewed three stitches per inch.

Fittings, Flanges and Valves

Hot Lines—Cover with 85% Magnesia Block and Asbestos Cement, or all Asbestos Cement, to the same thickness as adjacent pipe covering. Finish with canvas jacket, smoothly pasted on.

Cold and Ice Water Lines—Cover with Hair Felt and finish with a ½-in. thick coat of Carey No. 100 Hard Finish Asbestos Cement, troweled smooth. Total insulation thickness to be the same as that of adjacent pipe covering.

Outdoor Pipes and Equipment

Waterproof pipe insulation with 45-lb. per square asphalt roofing jackets, held in place with Carey Metal Stitch No. 2, jackets to have 2-in. laps in all directions. Waterproof valves, fittings, tanks, etc., with ¼-in. thick (dry) Thermotex Asphalt Emulsion applied in two layers, using wire mesh reenforced for large areas.

Underground Pipe Insulation

Insulate and waterproof all underground steam pipes with Carey System of Insulation for Underground Steam Pipes, strictly in accordance with manufacturer's specifications.

JOHNS-MANVILLE

EXECUTIVE OFFICES
22 East 40th Street, NEW YORK, N. Y.

Products

JOHNS-MANVILLE INSULATIONS.

For the following Johns-Manville products, see File Index: Acoustical Treatment and Sound Isolation; Asbestos and Asphalt Shingles; Built-up Roofs; Roof Insulation; Home Insulation; Insulating Board and Insulating Lath; Tile Flooring; Transite, Flat and Corrugated; Asbestos Wainscoting and Flexboard.

JOHNS-MANVILLE INSULATIONS

In these specifications for heating, plumbing and refrigeration insulation, the materials included are recommended because of their recognized efficiency, desirability and economy for the various services covered. Wherever possible, alternates have been included, with sufficient information to enable the writer of specifications to choose the proper material for each purpose.

In addition to heating, plumbing and refrigeration insulation, JOHNS-MANVILLE also manufactures other materials for insulating homes and buildings, and for the insulation of high temperature industrial equipment of all kinds.

I. HEAT INSULATIONS

Asbestocel

Pre-Shrunk Asbestocel sectional pipe insulation is made of moisture-resisting asbestos felts to prevent objectionable shrinkage in service. Furnished in either aluminum finish, asbestos paper finish or with the usual canvas jacket. Thicknesses up to eight ¼-in. plies. Temperatures up to 300° F.

Improved Asbestocel sheets and blocks furnished 4 plies to the inch, from ½ to 4 in. thick. Sizes 36x36, 18x36, 12x36 and 6x36 in. Temperatures to 300° F.

Asbestocel in flexible roll form furnished ¼ in. thick. Temperatures to 300° F.

85% Magnesia

Furnished in blocks 3x18 or 6x36 in., from ½ to 4 in. thick. Sectional pipe insulation in all standard thicknesses and pipe sizes. Temperatures up to 600° F.

Superex

The outstanding insulation for high temperatures. Blocks are 3x18 or 6x36 in., from 1 to 4 in. thick. Pipe insulation in all standard thicknesses and pipe sizes. Generally used in combination with 85% Magnesia or Asbesto-Sponge Felted. Temperatures to 1900° F.

Asbesto-Sponge Felted

The most efficient insulation for temperatures up to 700° F. Will withstand severe mechanical abuse. Sheets are 24x36 in., blocks 6x36 in., ½ to 4 in. thick. Pipe insulation in standard thicknesses and pipe sizes.

Vitribestos

A vitrified aircell sheet used for the lining of steel stacks to prevent corrosion. Furnished in flat or curved sheets. Temperature up to 700° F.

Sil-O-Cel Natural Brick

Furnished in standard firebrick and special brick sizes. Temperature up to 1600° F.

Sil-O-Cel C-22 Brick

Furnished in standard firebrick and special brick sizes. Temperature up to 2000° F.

Super Fire-Felt

Furnished in sheets 24x36 in. and blocks 6x36 in. in various thicknesses. Temperature up to 700° F.

Asbestos Millboard No. 101-S

A strong, fireproof and heat resisting sheet used for many purposes. Recommended in these specifications for finishing the insulation of boiler tube doors.

Economy Range Boiler Cover

Made in one, two or three layers of 1-in. hair felt, covered with muslin and quilted, in canvas cover.

Asbestocel Jacket for Range Boilers

Made of Pre-Shrunk Asbestocel in two flexible sections, one for each half of boiler. Secured with staples and three black lacquered bands. Furnished in either aluminum finish or asbestos paper finish; the latter being paintable.

II. COLD INSULATIONS

Pre-shrunk Wool Felt

Made of specially indented wool felt and provided with a dual-service liner for use on hot or cold water lines. Treated to prevent objectionable shrinkage in service. Furnished with either aluminum finish or the usual canvas jacket. Thicknesses ½, ¾, 1, double ½, and double ¾ in., for pipe sizes from ½ to 5 in. Temperatures 40° to 200° F.

Anti-Sweat

Sectional insulation for cold water and ice water piping to keep pipes cold and to prevent condensation and damage from dripping. Made of laminated insulating felt, protected inside and out with waterproofing felts. Thicknesses ½ and ¾ in. solid construction, and 1, 1½ and 2 in. broken joint construction. Temperatures 32° to 75° F.

Built-up Hair Felt

Applied in two, three or four 1-in. layers of J-M Standard Hair Felt with a waterproof jacket. Used for protection against freezing on pipes in exterior walls or exposed places.

Cork

Sectional pipe insulation, cork fittings and accessories for pipes carrying brine and ammonia or other cold liquids. For temperatures above 25° F., Ice Water Thickness; 0° to 25° F., Brine Thickness; below 0° F., Heavy Brine Thickness.

Built-up Brine and Ammonia

For pipes carrying low temperature fluids, such as brine and ammonia. Built up on the job, in 2 to 6 layers of 1-in. hair felt thoroughly sealed with a waterproof membrane. This material is not only a highly efficient insulation, but will withstand expansion and contraction without cracking or breaking open.

Rock Cork

A highly efficient low temperature insulation made from rock wool with a waterproof binder. Because it is mineral in composition, it is rotproof, verminproof, and will not support the growth of mold or bacteria. It is odorless and will not absorb odors. It is permanent, economical and unequalled in moisture resistance. Even under the most severe conditions Rock Cork maintains its high insulating value unimpaired over long periods of time.

Sheets furnished 18x36 in., 1½ to 4 in. thick, also 18x18x1 in. Lagging 18 in. long in thicknesses of 1½ to 4 in. and in widths 2 to 5 in., depending upon diameter.

In loose fill types of low temperature insulation, Granulated Rock Cork for a poured filling, and Zerofil for hand packing, are also manufactured by Johns-Manville.

III. CEMENTS AND MISCELLANEOUS MATERIALS

Note: As the principal use of cements is for finishing block and sheet insulation, and as they are not used for insulating purposes alone except where sheets or blocks are impractical, it is suggested that our Engineering Department be consulted in connection with the selection of the proper cement for any unusual condition.

Sil-O-Cel C-3 Concrete

Temperature up to 1800° F. An insulating concrete made on the job from Sil-O-Cel C-3 and portland cement. It may be cast monolithic in forms for the insulation of tube doors, baffles, dampers, etc.

Insulkote

Insulkote is a plastic waterproof coating for finishing insulated surfaces.

It has great durability under extreme weather conditions and will not crack under changes in temperature.

Double Coated Flexstone Weatherproof Jacket

A weatherproof jacket made from asbestos waterproofing felts, used to weatherproof insulated pipes.

SHORT FORM SPECIFICATIONS FOR FURNISHING AND APPLYING JOHNS-MANVILLE INSULATIONS

Heating and Ventilating Section

General Paragraphs

(Where applicable, the specification writer shall copy the general paragraphs. The general paragraphs shall be followed by the specifications relating to the specific equipment to be insulated.)

(1) Materials and Workmanship

All insulating materials shall be those furnished by Johns-Manville and all work executed under this contract shall be performed by them or their approved contractor, in strict accordance with their Detailed Specifications.

(2) Application

All Double Standard thick 85% Magnesia and all other insulation 3 in. thick and over, excepting insulating brick, shall be applied in two layers with all joints broken. All block and sheet insulation, unless otherwise noted, shall be finished with ½-in. thick hard finish Asbestos Cement reinforced with hexagonal mesh galvanized wire.

(3) Canvas

All insulation on pipes, fittings, valves and flanges located indoors and exposed to view (or in tunnels or accessible pipe chambers), except where asbestos paper finish or aluminum finish pipe insulation is specified, shall be finished as follows:

Piping: *(state weight—usually 4, 6 or 8 oz.)* ounce canvas sewed on over resin-sized paper.

Flanges, fittings and valves: *(state weight—usually 4, 6 or 8 oz.)* ounce canvas pasted on.

(4) Painting

All insulation which has been re-canvased shall be painted with one coat of glue sizing and two coats of first quality lead and oil paint of color selected. This work shall be done by *(state whether to be done by "this contractor", or if "as specified under", state where specified).*

(5) Fireproof Reinforced Asbestos Jacket

All insulation on piping in main pipe shaft or other locations indicated on plans, where a combustible finished insulation would constitute a fire hazard, shall be finished with a Fireproof Reinforced Asbestos Jacket.

Equipment Specifications

(The specification writer shall copy from these specifications the ones pertaining to the particular equipment to be insulated.) See also foregoing general paragraphs.

(6) Boiler Insulation

(A) Hot Air Furnace Insulation—The casing shall be insulated with 1 in. thick J-M 85% Magnesia Blocks reinforced with 2-in. hexagonal mesh galvanized wire and finished hard and smooth.

Note: Where it is found necessary to specify a lower-priced treatment, the casing should be insulated with 1-in. thick hard finish asbestos cement reinforced with 2-in. hexagonal mesh galvanized wire.

(B) Round Boiler Insulation—The boiler shall be insulated with 1 in. thick J-M 85% Magnesia Blocks reinforced with 2-in. hexagonal mesh galvanized wire and finished hard and smooth.

Note: Where it is found necessary to specify a lower-priced treatment, the casing should be insulated with 1-in. thick hard finish asbestos cement reinforced with 2-in. hexagonal mesh galvanized wire.

(C) Sectional Boiler Insulation—The boiler shall be insulated with 1½ in. thick J-M 85% Magnesia Blocks.

Note: The preceding specification should be used where highest type of insulation is desired.

Alternate: The boiler shall be insulated with 4-ply Improved Asbestocel Blocks.

Note: This alternate may be used where it is necessary to consider initial cost but must not be used where surface temperature exceeds 300° F.

(D) Fire-Tube Boiler Insulation—*(I) Boiler Shell*— The exposed steam and water surfaces of boiler shall be insulated with *(state thickness, see Note)* thick 85% Magnesia Block Insulation.

Note: Steam pressures up to 99 lbs., use 1½-in. thickness. Steam pressures from 100 to 199 lbs. use 2-in. thickness.

***(II) Boiler Walls or Settings*—**The outer 4½ in. of brick shall be a veneer of Sil-O-Cel C-22 brick.

(E) Water Tube Boiler Insulation—*(I) Drums and Drum Heads*—The exposed steam and water surfaces of boiler including drums and drum heads shall be insulated with *(state thickness, see Note)* thick 85% Magnesia Block Insulation.

Note: Steam pressures up to 99 lbs. use 1½-in. thickness. Steam pressures from 100 to 199 lbs. use 2-in. thickness. Steam pressures 200 lbs. and over, use 2½-in. thickness.

***(II) Boiler Wall or Setting Insulation—**(a) Solid Fire Brick Walls*—The exposed surfaces of boiler setting shall be insulated with 3-in. thick Superex-85% Magnesia Combination Block Insulation on portions opposite the furnace and 1½-in. thick 85% Magnesia Blocks on the remainder of the setting. The insulation shall be finished with ⅜-in. thick Transite Casing.

Note: This specification should be used where highest type of insulation is desired.

Alternate: The insulation shall consist of a 4½-in. thick veneer course of Sil-O-Cel C-22 Brick.

Note: This alternate may be used where it is necessary to consider initial cost.

(b) Air-Cooled Walls—

Note: Air-Cooled boiler walls should be insulated. Recommendations vary with type of wall used. Details and recommendations may be obtained upon request.

(c) Water-Cooled Walls—

Note: Recommendations vary with type of wall used. Details and recommendations may be obtained upon request.

***(III) Boiler Tube Door Insulation*—**The tube doors shall be lined with 2-in. thick Super Fire-Felt Sheets and finished with ¼-in. thick No. 101-S Asbestos Millboard.

Note: This specification may be used regardless of whether the boiler tube door has been hung or not.

Alternate: The inner recessed portion of the tube doors shall be completely filled with Sil-O-Cel C-3 Concrete. Reinforcement shall be provided for the Concrete.

Note: Inasmuch as this material is tamped in place, the foregoing alternate can be used only before the door is hung and when it can be laid in a horizontal position.

(7) Smoke Flue and Up-take Insulation

(A) External Insulation—The smoke flue, including uptake, shall be insulated with 2-in. thick *(state type of insulation, see Note)* Block Insulation applied over an air space.

Note: Temperatures up to 600° F. use 2-in. thick 85% Magnesia. Temperatures 600° to 1000° F. use 2-in. thick Superex.

(B) Internal Insulation—The smoke flue and up-take shall be lined with 2-in. thick Superex Block Insulation held securely in place and finished with ½-in. thick No. 319 Cement. On the inside surface to be insulated, suitable angle supports shall be furnished by *(state by whom—usually the Steel Contractor)* as specified under *(state where specified).*

Note: This specification should not be used where temperatures will exceed 1000° F. as this represents the temperature limit of the wire reinforcement.

(8) Steel Stack Insulation

(A) Internal Insulation—The stack shall be lined with Sil-O-Cel Natural Brick 2½ in. thick, and finished with No. 319 Cement ½ in. thick.

Angle rings shall be placed in the stack by *(state by whom—usually the Steel Contractor)* as specified under *(state where specified).*

They shall be placed on 37-in. centers vertically, with the outstanding leg punched with ¼-in. holes on 12-in. centers.

(B) External Insulation—The stack shall be insulated on the outside with 2-in. thick *(state insulation to be used, see Note).*

Angle rings shall be placed on the stack by *(state by whom—usually the Steel Contractor)* as specified under *(state where specified).*

They shall be placed on 36½-in. centers vertically, with the outstanding leg punched with ¼-in. holes on 12-in. centers.

Note: Temperatures up to 600° F. use 85% Magnesia Blocks. Temperatures 600° to 1000° F. use Superex Blocks.

(9) Brick Stack Insulation

The stack shall be insulated on the outside with 2-in. thick 85% Magnesia Blocks. Bolts shall be set in the brick work by *(state by whom)* as specified under *(state where specified).* They shall be set in vertical rows 36½ in. on center and shall be spaced 12 in. apart.

(10) Ceiling Insulation

The ceiling of the boiler and engine rooms shall be insulated with 2-in. thick 85% Magnesia Blocks finished with *(state finish, see Note).*

Note: The above insulation may be finished with hard finish Asbestos Cement or Flat Transite Sheets. Specify type of finish desired. Supports for the insulation are required. These shall be provided by others. Refer to detail specification for this work.

(11) Domestic Hot Water Range Boiler Insulation

The hot water range boiler shall be insulated with Johns-Manville *(state type, see Note)* Range Boiler Cover. The Range Boiler Cover shall be applied in a neat and workmanlike manner with all joints butted and tightly laced.

Note: Where hot water is heated by a coal-fired heater or an ordinary intermittent gas heater, "Asbestocel" type should be specified. Where water is heated by a gas heater controlled by a thermostat, "1-ply Economy" type should be specified. Where water is heated by electricity, "2-ply Economy" type should be specified.

(12) Hot Water Heater and Hot Water Storage Tank Insulation

The hot water heater and hot water storage tank shall be insulated with 1-in. thick 85% Magnesia Block Insulation.

Note: This specification should be used where highest type of insulation is desired.

Alternate: The hot water heater and hot water storage tank shall be insulated with Asbestos Cement applied in two coats to a total thickness of 1-in., reinforced with 2-in. hexagonal galvanized mesh wire and finished hard and smooth.

Note: This alternate is designed for small dwellings and for the general run of fuel such as coal, oil, natural gas, etc. However, where manufactured gas is used as a fuel, this alternate specification should not be used.

(13) Feed Water Heater Insulation

The feed water heater shall be insulated with 1½-in. thick 85% Magnesia Block Insulation.

(14) Hot Air Heater, Ducts and Heater Casing Insulation

All heater casings, fan housings and warm air ducts and flues shall be insulated with 1½-in. thick 85% Magnesia Blocks.

Note: This specification should be used where highest type of insulation is desired.

Alternate: All heater casings, fan housings and warm air ducts and flues shall be insulated with 4-ply Improved Asbestocel Sheets.

Note: This alternate may be used for all ordinary conditions.

(15) Steam Pump Insulation

The steam and hot water cylinders and chests of all pumps shall be insulated with 2-in. thick 85% Magnesia Blocks filled out with Asbestos Cement. On heads and chests, this insulation shall be made removable and replaceable.

A suitable Russia iron jacket to be furnished by *(state by whom—usually the owner)* shall be used to finish the insulation.

(16) Auxiliary Turbine Insulation

The casings of auxiliary turbine shall be insulated with 2-in. thick 85% Magnesia Blocks filled out with Asbestos Cement.

(17) Main Turbine Insulation

(Specification furnished on request.)

(18) Hot Air Pipe Insulation

All hot air piping shall be insulated with two layers of 1-ply Asbestocel in flexible roll form, wired on, and all joints sealed with a 3-in. wide strip of Asbestos Paper pasted on.

Note: *This specification is designed for a small dwelling and for the general run of fuels such as coal, oil, natural gas, etc. However, where manufactured gas is used as the fuel, three layers of 1-ply Asbestocel is recommended.*

(19) Hot Water Pipe Insulation

All hot water piping shall be insulated with 3-ply Pre-Shrunk Asbestocel with *(state whether aluminum, asbestos or canvas)* finish on exposed piping and *(state whether asbestos or canvas)* finish on concealed piping.

Note: *This specification is designed for a small dwelling and for the general run of fuels such as coal, oil, natural gas, etc. However, where manufactured gas is used as the fuel, Standard Thick J-M 85 % Magnesia should be used.*

(20) Steam Pipe Insulation—Indoors

Temperature up to 600° F.

All steam piping shall be insulated with 85% Magnesia Pipe Insulation according to the following table:

Pressure or condition	Temperature range	Thickness		
		Pipes larger than 4 in.	Pipes 2 in. to 4 in.	Pipes smaller than 2 in.
Up to 24 lbs.....	212° to 265° F.	Std.	Std.	Std.
25 lbs. to 99 lbs...	266° to 337° F.	1½ in.	Std.	Std.
100 lbs. to 200 lbs..	338° to 388° F.	2 in.	1½ in.	Std.
Low superheat	389° to 499° F.	Dbl. std.	2 in.	1½ in.
Superheat	500° to 599° F.	3 in.	Dbl. std.	2 in.

Note: *Asbesto-Sponge Felted Insulation may be specified for the above service where extra mechanical strength is desired. The thicknesses may be taken from the above table; Standard Thick in table to be specified as 1 in., Double Standard as 3 in.*

Alternate: All steam piping shall be insulated with 4-ply Pre-Shrunk Asbestocel.

Note: *This alternate may be used where it is necessary to consider initial cost but must not be used on piping carrying steam over 300° F.*

(21) Steam Pipe Insulation—Indoors

Temperature 600° to 800° F.

All steam pipes, 600° to 800° F., shall be insulated with Superex-85% Magnesia Combination Insulation *(See Note B)* according to the following table:

Condition	Temperature range	Thickness		
		Pipes larger than 4 in.	Pipes 2 in. to 4 in.	Pipes smaller than 2 in.
Superheat ..	600° to 699° F.	3½ in.	3 in.	2 in. (see Note A)
Superheat ..	700° to 800° F.	4 in.	3½ in.	2 in. (see Note A)

Note A: *On pipes smaller than 2 in., the entire insulation shall consist of one layer of Superex. On pipes 2 in. and larger, the insulation shall consist of an inner layer of Superex, approximately 1½ in. thick, and an outer layer of 85% Magnesia, either 1½ in., 2 in. or 2½ in. thick, to make up the total thickness as specified. (See Note B.)*

Note B: *Asbesto-Sponge Felted Insulation may be specified for the above service where extra mechanical strength is desired. In this case, for temperatures up to 700° F., Asbesto-Sponge Felted Insulation shall be specified for the entire total thickness; and for temperatures, 700° to 800° F., Asbesto-Sponge Felted Insulation shall be specified only for the outer layer, in place of the 85% Magnesia Insulation.*

(22) Heating Returns and Radiator Branch Insulation

All heating returns, runouts and concealed radiator branches shall be insulated with 3-ply Pre-Shrunk Asbestocel.

(23) Fittings and Valve Insulation

All fittings smaller than 4 in. shall be insulated with hard finish Asbestos Cement to a thickness equal to that of the adjacent insulation. All bodies of fittings and valves, 4 in. and larger, shall be insulated with block insulation of the same material and to a total thickness equal to the adjacent pipe insulation.

(24) Flange Insulation

(A) Permanent Type—All flanges shall be insulated with block insulation of the same material and to the same total thickness as adjacent pipe insulation, extending over the adjacent pipe insulation at least 2 in. The space between the flange insulation and the pipe insulation shall be filled with Asbestos Cement.

All flanges on piping smaller than 4 in. shall be insulated with hard finish Asbestos Cement to the same thickness as the adjacent pipe insulation.

(B) Removable and Replaceable Type—All flanges shall be insulated with block insulation, removable and replaceable, and Contractor shall submit sample to the *(state to whom—Architect or Consulting Engineer)* for approval. The flange insulation shall be of the same total thickness as the adjacent pipe insulation, extending over the adjacent pipe insulation at least 2 in. The space between the flange insulation and the pipe insulation shall be filled with Asbestos Cement.

(25) Overhead Outdoor Insulation

All hot piping, or surfaces, located outdoors and above ground shall be insulated with the same materials as specified for indoor lines, or surfaces, but shall be ½ in. greater in thickness.

Insulation on piping shall be protected from the weather by means of a Double-coated Flexstone Weatherproof Jacket. Insulation on fittings and surfaces other than piping shall be weatherproofed by the application of ¼-in. thick Insulkote applied over ¼-in. thick Asbestos Cement.

Note: *Asbesto-Sponge Felted Insulation with an Integral Weatherproof Jacket may be used for the above service where extra mechanical strength of the insulation is necessary. The thickness specified should be the same as would be required for 85% Magnesia under the same conditions.*

(26) Underground Pipe Insulation Within Building

All underground steam and hot water lines within buildings, such as in unexcavated spaces or pipe trenches, shall be insulated with Asbesto-Sponge Felted Insulation with Integral Waterproof Jacket to a thickness not less than that specified for the same line in the building.

(27) Underground Pipe Insulation Outdoors

All steam and hot water heating pipes running underground to garages, etc., shall be insulated with 1½-in. thick Asbesto-Sponge Felted Pipe Insulation with Integral Weatherproof Jacket, wired on and sealed with lap cement. The insulation shall be further waterproofed by a Double-coated Flexstone Weatherproof Jacket wired on. The pipe shall be surrounded with enough broken stone to provide proper drainage.

Note: *This specification is designed for small dwellings where short runs of steam or hot water piping go to a service building.*

(28) Cold Water Service Pipe Insulation

All cold water service piping shall be insulated with 1-in. thick J-M Pre-Shrunk Wool Felt Pipe Insulation with *(state whether aluminum or canvas)* finish on exposed piping and with canvas finish on concealed piping.

All fittings and valves in this piping shall be insulated with ¾-in. thick J-M Standard Hair Felt finished with ¼-in. hard finish asbestos cement.

All flanges shall be insulated with the same material used on the pipe but of a size suitable to encircle flanges completely and of a length sufficient to overlap the adjoining piping insulation at least 2 in. on each side. Hard finish asbestos cement shall be used as a finish and to fill the space between pipe and flange insulation.

SHORT FORM SPECIFICATIONS
FOR FURNISHING AND APPLYING JOHNS-MANVILLE INSULATIONS

Plumbing and Refrigeration Section

General Paragraphs

(Where applicable, the specification writer shall copy the general paragraphs. The general paragraphs shall be followed by the specifications relating to the specific equipment to be insulated.)

(29) Materials and Workmanship

(See Paragraph 1.)

(30) Application

All block and sheet insulation, unless otherwise noted, shall be finished hard and smooth with ½-in. thick hard finish Asbestos Cement reinforced with hexagonal mesh galvanized wire.

Note: *On cold storage work the insulation shall be specified to be finished with plastic asphalt or Portland cement mortar.*

(31) Canvas

(See Paragraph 3.)

(32) Painting

(See Paragraph 4.)

(33) Fireproof Reinforced Asbestos Jacket

(See Paragraph 5.)

Equipment Specifications

(The specification writer shall copy from these specifications the ones pertaining to the particular equipment to be insulated.) See also foregoing general paragraphs.

(34) Hot Water Heater and Storage Tank Insulation

(See Paragraph 12.)

(35) Domestic Hot Water Range Boiler Insulation

(See Paragraph 11.)

(36) Hot Water Service Pipe Insulation

All hot water service piping shall be insulated with 1-in. thick J-M Pre-Shrunk Wool Felt with *(state whether aluminum or canvas)* finish on exposed piping and with canvas finish on concealed piping.

All fittings and valves in this piping shall be insulated with hard finish asbestos cement to a thickness equal to that of the adjacent insulation.

(A) Flange Insulation, Permanent Type—All flanges shall be insulated with hard finish asbestos cement to a thickness equal to that of the adjacent insulation.

(B) Flange Insulation, Removable and Replaceable Type—All flanges shall be insulated with the same material used on the pipe but of a size suitable to encircle flanges completely and of a length sufficient to overlap the adjoining pipe insulation at least 2 in. on each side. Hard finish asbestos cement shall be used as a finish and to fill the space between pipe and flange insulation.

(37) Cold Water Service Pipe Insulation

(See Paragraph 28.)

(38) Iced or Drinking Water Pipe Insulation

All piping carrying cooled drinking water shall be insulated with Ice Water Thickness Cork Insulation or 1½-in. thick double-layer Anti-Sweat applied with all joints broken. Fittings and valves on pipes insulated with Anti-Sweat shall be insulated with hair felt and waterproof membrane to a total thickness equal to the adjacent pipe insulation. If Cork Insulation is used, fittings and valves shall be insulated with Cork Fitting Jackets.

(39) Insulation of Cold Pipes Exposed to Freezing

Wherever cold water, soil, or waste pipes are exposed to freezing and are so designated on the plans, they shall be insulated with three (or more) layers of Built-up Hair Felt Insulation. Fittings and valves shall be insulated in the same manner as the adjacent piping. *(Recommendations may be obtained upon request.)*

Note: *Where pipes are in exposed locations and likely to be subjected to freezing, care should be taken to indicate these locations upon the plans.*

(40) Insulation for Pipes Carrying Liquids or Gases at Low Temperatures

All pipes carrying brine, ammonia or other liquids or gases at low temperatures, shall be insulated with Cork or Built-up Brine and Ammonia Insulation according to the following table:

Temperature range	Thickness
Cork	
24° to 15° F.	Brine
14° to 0° F.	Brine
Minus 1° to minus 10° F.	Heavy brine
Minus 11° to minus 20° F.	Heavy brine
Built-up Brine and Ammonia	
40° to 15° F.	2 in.
14° to minus 5° F.	3 in.
Minus 6° to minus 20° F.	4 in.

On cork insulated pipes, the fittings, valves and flanges shall be insulated with Moulded Cork Insulation to a thickness equal to that of the adjacent pipe insulation. On pipes covered with Built-up Brine and Ammonia Insulation, the fittings, valves and flanges shall be insulated in the same manner as the adjacent piping.

(41) Cylindrical Tank Lagging for Cold Liquids

All cylindrical tanks such as Brine Coolers, Accumulators, Cold Water Storage Tanks, etc., shall be lagged with J-M Rock Cork, cemented to the tank with hot asphaltic cement and finished with plastic asphalt.

Thicknesses shall be according to the following table:

Temperature range	Thickness
15° to 24° F.	5 in.
25° to 39° F.	4 in.
40° to 50° F.	3 in.
Above 50° F.	2 in.

(42) Cold Room and Equipment Insulation

All floors, walls and ceiling areas in cold rooms, and all surfaces of cold equipment, shall be insulated with J-M Rock Cork applied in one or more layers, breaking all joints. Thicknesses shall be according to the following table:

Temperature range	Thickness	Number of layers
Minus 25° to minus 16° F.	8 in.	2
Minus 15° to minus 1° F.	7 in.	2
0° to plus 14° F.	6 in.	2
15° to 24° F.	5 in.	2
25° to 39° F.	4 in.	1 or 2
40° to 50° F.	3 in.	1
Above 50° F.	2 in.	1

Note: *Where the dead load on the insulation is excessive, consult nearest Johns-Manville office for detailed specifications.*

Alternate: All types of construction and equipment requiring a loose filler type of insulation, if the insulation is to be poured, shall be insulated with J-M Granulated Rock Cork, packed to a density of 14 lb. per cu. ft.; if the insulation is to be hand-packed, shall be insulated with Zerofil, packed to a density of 10 lbs. per cu. ft. Thicknesses shall be twice that shown in foregoing table.

Note: *Provision for proper waterproofing should always be made in the application of these materials.*

KEASBEY & MATTISON COMPANY

AMBLER, PA.

For District Offices, see Section on K & M Asbestos Shingles

K & M INSULATIONS

Described below are some of the insulations manufactured by this Company. Among those not listed are plastic insulations and refractory cements. In the K & M line there is an insulation for every heat conservation problem. Efficiencies, heat transmissions and detailed specifications of the various K & M Insulations will be furnished on request. Expert engineering services and assistance on difficult insulation problems are at your disposal.

Pipe Insulations

K & M "Featherweight" 85% Magnesia Pipe Insulations—This type of insulation, originated by the KEASBEY & MATTISON COMPANY, has the high insulating properties of basic carbonate of magnesia which material, combined with the proper amount of clean asbestos fibre as a binding element, produces a material absolutely fireproof, strong mechanically, exceptionally light in weight and highly efficient as an insulating material.

"Featherweight" 85% Magnesia Pipe Insulation is made in sections and segments 3 ft. long and in thicknesses as follows: *Standard:* 1½ in., 2 in. *Double Standard:* (Broken Joint) and 3 in. thickness (Broken Joint).

K & M "Hy-Temp" Pipe Insulation—Will maintain high efficiency where temperatures run from 600° to 1900° F. Hy-Temp is a combination of high heat resisting materials and asbestos fibre, which materials when bonded together produce an insulation of low thermal conductivity and relatively light weight—(about 24 lbs. per cu. ft.).

Hy-Temp Pipe Insulation is made in sections and segments, 3 ft. in length and in the same moulded shapes as "Featherweight" 85% Magnesia Insulation.

"Hy-Temp" Combination Pipe Insulation—This consists of an inner layer of Hy-Temp Insulation and an outer layer of "Featherweight" 85% Magnesia Insulation. This construction combines the great insulation efficiency of "Featherweight" 85% Magnesia with the high heat resistance of Hy-Temp Insulation.

Lamino Sponge Felt Pipe Insulation—A laminated insulation composed of asbestos fibre and particles of finely ground sponge, which materials form a cellular felt that is built up, having about forty laminations per inch of thickness.

It is tough and flexible. Recommended where temperatures range up to 700° F.

Ambler Air Cell Pipe Insulation—This pipe insulation is an approved air cell insulation, made from corrugated asbestos felt, alternated with a layer of plain asbestos felt, firmly bonded together. Each layer is approximately ¼ in. thick. The absence of vegetable binders make Ambler Air Cell Pipe Insulation vermin and roach proof.

Standard sizes are ½, ¾ and 1 in. in thickness, sections being 3 ft. long. Greater thicknesses can be furnished.

Woolfelt Pipe Insulation—

Duplex Pipe Insulation—A woolfelt insulation designed to give satisfactory service on either cold or hot water service lines. A special impregnated inner lining assures maximum service for these services.

Cold Water Pipe Insulation—This insulation is made of successive layers of woolfelt with an inner lining of waterproof felt. Its purpose is for use on cold water service lines.

Hot Water Pipe Insulation—This insulation is made of successive layers of woolfelt with an inner lining of asbestos paper. Its use is primarily for hot water service lines.

Non-Sweat Pipe Insulation—An insulation made in single and double layer construction composed of a combination of insulating and waterproofing felt. Single layer is made in thicknesses of ½ and ¾ in. Double layer (Broken Joint) is made in thicknesses 1, 1½, and 2 in. The double layer, or Broken Joint, construction eliminates the longitudinal and the abutting joints.

Non-Sweat Pipe Insulation is a superior covering for use on cold water lines.

Non-Frost Pipe Insulation—This insulation is constructed of layers of hairfelt, surrounded by several layers of woolfelt and a layer of treated woolfelt inside the hairfelt to prevent the hair coming in contact with the pipe surface. For use on insulated cold water pipes that are exposed to moderately low temperatures.

Non-Frost Pipe Insulation is furnished in 3-ft. lengths, covered with canvas jacket, brass lacquered bands. It is made in all pipe sizes from ½ in. up, and in one thickness—about 1¼ in.

Sheet and Block Insulations

K & M "Featherweight" 85% Magnesia Block Insulation—This material is composed of carbonate of magnesia and asbestos fibre manufactured in exactly the same manner as 85% "Featherweight" Magnesia Pipe Insulation. Block Insulation is moulded and machined into proper form.

It is designed particularly for use on flat, curved and irregular surfaces of boilers, breachings, walls, stills and tanks.

K & M "Hy-Temp" Block Insulation—Hy-Temp Block Insulation is manufactured from the same combination of materials as Hy-Temp Pipe Insulation and carries the same essential qualities of heat resistance, together with mechanical strength and durability.

These blocks are furnished in standard widths 3, 6, 9 and 12 in. by 36 in long, in thicknesses ½ to 4 in. Weight is approximately 2 lbs. per sq. ft., per 1 in. of thickness.

"Hy-Temp" Combination Block Insulation—This combination of insulation is an inner layer of Hy-Temp Blocks and an outer layer of "Featherweight" 85% Magnesia Block. The thickness of the Hy-Temp Block necessary to give maximum efficiency is determined on the basis of the maximum temperature on the inner surface of the Hy-Temp and affords protection to the "Featherweight" 85% Magnesia outer layer of insulation which is high in insulation value, but lower in heat resistance than Hy-Temp Insulation.

Lamino Sponge Felt Sheet and Block Insulation—This block insulation is recommended where surface temperatures do not exceed 700° F. It is fabricated and not a moulded insulation. Its initial efficiency is often higher than 85% Magnesia Insulation.

Lamino Sponge Felt Block can be used in combination with Hy-Temp Block, as an outer layer which combination permits its use for much higher operating temperatures than 700° F.

K & M Air Cell Sheets and Blocks

This type of insulation is used for medium and low temperature conditions, such as low pressure boilers, steam water-heaters, dry kilns, warm air ducts and similar services. It is an inexpensive insulation with an efficiency not quite as high as "Featherweight" 85% Magnesia Block, but it is entirely satisfactory where temperature limits do not exceed 300° F.

Standard Air Cell Blocks are 6, 9, 12, 18 and 36 in. wide by 36 in. and 72 in. long, from ½ to 4 in. in thickness. Each ply of block is a full ¼ in. thick. Weight approximately 1 lb. per sq. ft. per 1 in. of thickness.

THE RUBEROID CO.

EXECUTIVE OFFICES: 500 Fifth Ave., NEW YORK, N. Y.

Manufacturers of Ruberoid-Watson Insulating Products

DIVISIONAL OFFICES

NEW YORK CHICAGO BOSTON (MILLIS) ERIE BALTIMORE MOBILE

PRODUCTS

Blocks, Sheets, Boiler Jackets, Insulating Cements, Mineral Wool (Loose—Granulated—Blanket), 85% Magnesia, and General Asbestos Products. For other Ruberoid Products see File Index.

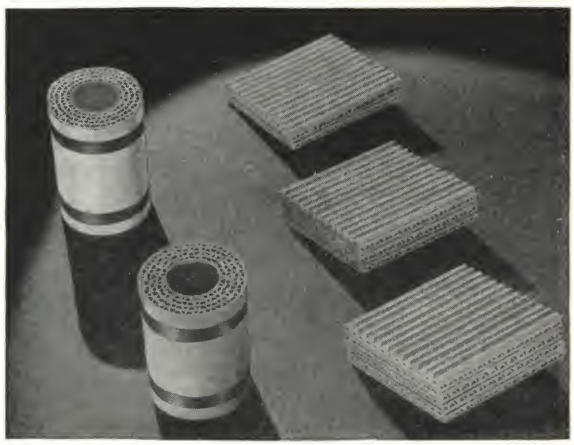
SUPERCELL PIPE COVERINGS

For Low and Medium Pressure Steam Lines

Check the distinct advantages of Supercell Pipe Insulation—the newest development in the low and medium pressure field—temperature limit 500° F. It has 14 to 16 laminations of indented Asbestos Felt to the inch thickness. It is considerably lighter than old-fashioned pipe insulation, yet, due to its unique construction, provides as much as 35% higher efficiency.

By using less silicate coupled with the new pure white Pyroxylin finish which is water, grease and oil proof, shrinkage has been brought under absolute control. It is easily cleaned—a factor to be considered for residential work where cellars are used for recreation rooms.

Supercell Pipe Covering



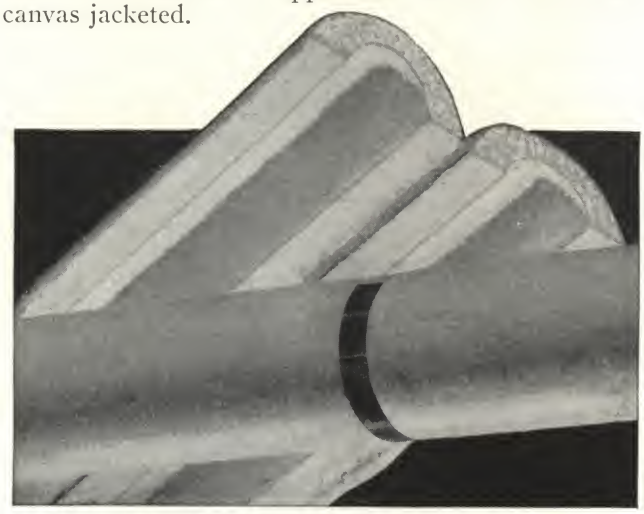
Air Cell Pipe Insulation

Air Cell

Made 2, 3 and 4 ply—each ply ¼-in. thick. Furnished in either the new Pyroxylin finish or with canvas jacket. Temperature limit 350° F.

85% Magnesia

85% Magnesia pipe coverings are made of approximately 85% pure carbonate of magnesia and carded long Asbestos fibre. Temperature limit 600° F. Light in weight, fireproof, extremely high insulating value, yet has maximum mechanical strength consistent with efficient insulation. Supplied in various thicknesses, canvas jacketed.



85% Magnesia Pipe Covering

PLASTIC INSULATIONS

The various grades of Ruberoid-Watson Plastic Insulations cover practically every industrial need. There is a cement in every price class as well as one for every purpose.

All Ruberoid-Watson Insulating Cements are scientifically prepared of various types of raw material and selected binding agents of low heat conductivity, to mix readily and trowel easily, and when properly applied, will produce a finished job that is both efficient and neat in appearance.

While this line contains grades offered for the competitive market, as well as the more expensive types, any Ruberoid-Watson Asbestos or Insulation Cement can be specified and used with complete assurance that it will stick well to the surface, have a minimum shrinkage, trowel well and provide the maximum insulation efficiency.

A catalogue describing in detail the various grades of Ruberoid-Watson Plastic Cements will gladly be furnished on request.

PIPE COVERINGS

For Hot and Cold Water Lines

Woolfelt Pipe Covering

Special surfacing process increases efficiency 20% to 30%. Weight also is reduced 20% to 30%. Made in three styles of liners: Asbestos Felt Paper for hot water lines; Waterproofed Tar for cold water lines; "Twin Purpose" for both hot and cold water lines. Furnished in either the new Pyroxylin finish or with Canvas Jacket.

Anti-Sweat Pipe Covering

Built of inner liner of Asphalt-saturated Asbestos paper, a half-inch of pure woolfelt, 2 layers of Asphalt-saturated Asbestos felt, another half-inch of pure woolfelt, with 2 outer layers of Asphalt-saturated Asbestos felts. Outer layer has flap extending beyond the joint at least 3 inches. 1-inch thickness and greater made in telescopic construction—sections are 3 feet in length.

Anti-Sweat Pipe Covering

Frost-Proof Pipe Covering

Succeeding layers of cattle hair felt and pure woolfelt—with liner of Asphalt-saturated woolfelt—tightly wrapped, provides an ingenious, highly efficient, freeze-proof covering for cold water lines, drain pipes, etc. For unusually severe conditions obtainable also in telescopic construction or a built-up hair felt insulation. Canvas Jacketed. Special weatherproof jacket for outdoor use, extra.

MINERAL WOOL

Loose—Granulated—Blanket

Note Silky Texture of Ruberoid Mineral Wool

Genuine Ruberoid Mineral Wool is clean, silky, long fibre. This long silky fibre makes the wool staple, overcoming the tendency to pack and settle. It is free from harsh brittle particles which make some wool dangerous and difficult to handle.

The loose mineral wool is packaged in 35 lb. bags containing about 3½ cubic feet. A bag will cover in excess of 21 square feet gross (including the studs or joists) 3⅝ inches thick when packed to a service density of 6 lbs. per cubic foot.

Granulated Mineral Wool is in pellet form averaging from the size of a pea to a marble. In this form it is easily poured between studs and joists and for filling in irregular spaces. Bags contain 40 lbs. When applied to a service insulation density of about 7 lbs. per cubic foot, 4 in. thick, it gives a coverage of about 17 square feet per bag.

Mineral Wool for flat or curved surfaces is manufactured into blankets by using annealed long fibre wool, felting it and building it up to the required thickness between metal fabrics of various types. These blankets are secured with galvanized wire between the metal fabric. Thickness from 1 to 6 inches. Standard size blankets 24x96 inches and 24x48 inches.

Range Boiler Jackets

Made of built-up layers of corrugated and flat asbestos paper. They keep the water hot by preventing loss of heat by radiation, thus effecting economies in the consumption of gas or other fuel. Sizes to fit 30 and 40 gallon range boilers carried in stock. Special sizes made to order. Supplied complete, ready for easy installation. Saves your customers' money.

CORK IMPORT CORPORATION

Novoid Cork Insulation

McGraw-Hill Building, 330 West 42nd Street
NEW YORK, N. Y.

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Products

NOVOID CORKBOARD INSULATION—for all cold storage rooms, and walls and roofs of all kinds of buildings.

NOVOID FEATHERWEIGHT CORKBOARD—This is a special light density corkboard recommended for the insulation of household refrigerators, cold storage store display cabinets, motor truck bodies, refrigerated or air conditioned railroad car bodies, and generally where it will be enclosed in and supported by the construction.

STONEWALL PLASTIC FINISHES—Airproof and waterproof finishing surface for Novoid Corkboard.

NOVOID CORK PIPE COVERING—for all cold lines, tanks, refrigerated drinking water, and air conditioning systems.

NOVOID CORK MACHINERY ISOLATION—for reducing the noise and vibration of moving machinery.

NOVOID AIRTITE CORKBOARD—A special light density Corkboard with a thin asphalt mastic finish, ironed on both surfaces. Impervious to air in filtration. For *"hard service"* use, in ice storages, dairy rooms, fur storages and sharp freezers of all kinds. Sheets only: 12x36 in., 1, 1½, 2, 3 and 4 in. thick.

Novoid Corkboard

Novoid Cork Pipe Covering for Air Conditioning

Stonewall Plastic Finishes

Also Novoid White Cold Storage Paint and Novoid Aluminum Paint—for interiors of all rooms under refrigeration where Stonewall Plastic finishes are specified for surfacing.

Installation, Prices and Information

Good cork insulation must be properly installed to give the maximum insulation efficiency. Our distributors in your territory are insulation engineers and contractors, qualified by long experience in the proper methods of erecting Novoid Cork Insulation. Their mechanics in the field are experienced in their trade and their skill means sound, permanent insulation structures.

These distributors will gladly co-operate with you in solving your particular insulation problem, by the application of Novoid Cork Insulation.

Prices, samples and information will be given without obligation.

Novoid Cork Pipe Covering for Cold Lines

Novoid Corkboard

For the Cold Storage Industry—Novoid Corkboard insulation, manufactured in the United States, is invaluable to the cold storage industry. Rooms, vaults, cabinets, refrigerators and quick freezing rooms must be adequately insulated to keep even temperature for the manufacture of dairy products and other food stuffs and the preservation of these edibles as well as meat, fish, poultry, eggs, vegetables and fruits.

For Air Conditioning Systems—Novoid Corkboard is light in weight yet structurally strong. When you specify this long life insulation for metal ducts carrying cool air, you have a heat resisting insulation on the distributing ducts that keeps heat out and cold in.

Air washing rooms properly insulated with Novoid Corkboard will prevent costly infiltration of warm air that otherwise soon dissipates the correct temperature that should be maintained.

Shipment—Carload quantities of Novoid Corkboard are usually shipped in bulk or "tubes" (units wrapped lengthwise sides exposed). Less carload shipments are packed in fibre cartons.

Thickness

1—1½—2—3—4 and 6 ins.

Width

Standard size	12x36 ins.
Large size	24x36 ins.
Special size	12x32 ins.

Stonewall Plastic Finish

Stonewall Plastic Finish is a uniform easy working asphaltic plaster, thoroughly machine-mixed at the factory. It is applied cold as received, just like surface cement. It forms a smooth, one-piece, airtight and watertight finish that keeps corkboard dry and sound. It fills every crack and crevice and equalizes any unevenness.

Stonewall Plastic Finish is guaranteed to be waterproof, and not to crack, chip, bulge, run, or become brittle. It is odorless and non-inflammable.

Stonewall Plastic Finish can be washed with hot or cold water, or steam, without injury. It will not absorb odors. Therefore it makes cold storage rooms absolutely sanitary.

If cut or cracked by accident Stonewall Plastic Finish can be skim coated or patched and such injuries completely healed. The new work bonds perfectly with the old.

Stonewall Emulsion

This is the base material of Stonewall Plastic Finish and may be obtained when the factory machine-mixed finish is not desired or when a mineral filler is to be added, in order to give a rough sand appearance to the surface, somewhat similar to stippled walls.

Should a smooth finish be desired, the second coat of Stonewall Emulsion is applied as received. By dipping the trowel in water, the finish may be glazed on the surface. No further troweling is necessary.

Stonewall Plastic Emulsion

Stonewall Plastic Emulsion is a mixture of the proper proportions of Stonewall Emulsion, asbestos floats, and fine screened sand, mixed at the factory and shipped to the job ready for application.

Novoid Cork Pipe Covering

This companion product to Novoid Corkboard is made in three thicknesses: *Heavy Brine,* for temperatures below 0° F.; *Brine,* for temperatures from 0° F. to 25° F.; *Ice Water,* for temperatures above 25° F.

Novoid Cork Pipe Covering is used for covering all brine and ammonia lines, wherever located, and for insulating the ice water lines of refrigerated drinking water systems in hotels, office buildings, and factories. The accurately moulded, asphalt mastic coated sections fit pipes tightly leaving no spaces in which moisture might accumulate, freeze and disrupt the insulation.

Save time and labor with Novoid Cork Pipe Covering when insulating air conditioning pipe lines. Sectional covering for pipe; also covers for welding ells, standard or long radius, 90° or 45° are delivered ready to fit pipe sizes up to 20 ins., inclusive. The illlstration, on preceding page, shows 8-in. pipe size cork pipe covering ready to apply.

Novoid Cork Covering is made of pure cork. Its insulating efficiency is permanent as it will not absorb moisture.

For covering all fittings Novoid Cork Fitting Jackets are used. These cork jackets are moulded to fit closely so that no air spaces will exist between the fittings and the insulation.

For covering tanks we recommend the use of Novoid Cork Lagging.

Novoid Cork Machinery Isolation

Novoid Cork Machinery Isolation provides an economical and effective means of reducing the noise and vibration produced by fans, motors, pumps, engines, presses, and practically all other kinds of moving machinery.

Made by baking under pressure a selected grade of granulated cork, its density is controlled. Properly applied, it will not absorb moisture and does not rot. Furthermore it will not harden or take a permanent set, but retains its resiliency indefinitely.

Novoid Cork Machinery Isolation is made in three densities—Light, Medium and Heavy—which provide a proper material for use under practically all conditions of service. 12 ins. wide, 36 ins. long, thickness 1, 1½, 2, 3, 4, 5 and 6 ins.

Literature and Samples

Bulletin 293—Novoid Corkboard Insulation.
Bulletin 292—Novoid Cork Covering.
Bulletin 289—Stonewall Plastic Finish.
Bulletin 294—Novoid Cork Machinery Isolation.

Samples of each product furnished without obligation.

MEMORANDA

ARMSTRONG'S

CORKBOARD INSULATION
CORK COVERING · VIBRACORK
CORKOUSTIC · TEMCOUSTIC
TEMLOK, TEMWOOD AND TEMBOARD

ARMSTRONG CORK PRODUCTS CO.
BUILDING MATERIALS DIVISION . . LANCASTER, PA.

ARMSTRONG CORK PRODUCTS COMPANY

BUILDING MATERIALS DIVISION

LANCASTER, PA.

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LITTLE ROCK, ARK., Fisher Cement & Roofing Company
LOS ANGELES, CALIF., Gay Engineering Corporation
MEMPHIS, TENN., Fisher Lime and Cement Company
NEW ORLEANS, LA., H. T. Steffee
PHILADELPHIA, PA., John R. Livezey
PORTLAND, ORE., Asbestos Supply Company
RICHMOND, VA., John R. Livezey
SAN ANGELO, TEX., San Angelo Building Material Co.
SAN FRANCISCO, CALIF., Van Fleet-Freear Company
SEATTLE, WASH., Asbestos Supply Company
SPOKANE, WASH., Asbestos Supply Company
TACOMA, WASH., Asbestos Supply Company
WASHINGTON, D. C., John R. Livezey

PRODUCTS

ARMSTRONG'S CORKBOARD for walls and roofs of buildings, for refrigerated rooms, and for air ducts.

ARMSTRONG'S CORK COVERING for the insulation of all cold lines.

ARMSTRONG'S VIBRACORK for the isolation of rotating and reciprocating machinery.

ARMSTRONG'S TEMLOK INSULATION for residences and for the roofs of commercial buildings.

ARMSTRONG'S CORKOUSTIC and TEMCOUSTIC for acoustical treatment and interior finish.

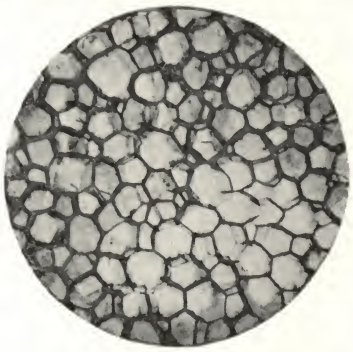
ARCHITECTURAL SERVICE BUREAU

Armstrong's Architectural Service Bureau is maintained at the Company's main offices, Lancaster, Pa., to serve architects and engineers. Architects and engineers are invited to request any needed technical information relating to Armstrong insulating products.

Complete testing laboratories under the direction of a corps of specially trained and experienced engineers are also maintained at Lancaster. Any special insulation or vibration problems may be referred here.

CHARACTERISTICS OF ARMSTRONG'S CORKBOARD

Cork is the outer bark of the cork oak tree. It is a natural insulator and guards this tree against the severe summer heat experienced in Portugal, Spain, and northern Africa. Cork is made up of millions of tiny cells, in each of which is entrapped a minute quantity of still air. Each of these cells is sealed away from its neighbors, providing high resistance to the passage of heat and the penetration of moisture. This natural insulating material is ground, cleaned, and baked in molds to form Armstrong's Corkboard, the physical characteristics of which are summarized below.



Microphotograph showing the cellular structure of cork, making it the ideal insulating material

Cellular Structure — Scientists agree that the most effective barrier to the transmission of heat is a homogeneous mass of minutely-divided motionless air particles. The cellular structure of cork gives Armstrong's Corkboard natural insulating properties which do not deteriorate.

Low Density—Fifty-three per cent of the total volume of cork is air. The light weight or low density of Armstrong's Corkboard insures high insulating efficiency.

Low Thermal Conductivity—The thermal conductivity of Armstrong's Corkboard, depending on the density, is 0.27 to 0.29 B.t.u. per hour, per square foot, per inch thickness, per degree temperature difference between the two sides at 90° F. mean temperature. (U. S. Bureau of Standards.)

High Moisture Resistance—Its cellular structure gives Armstrong's Corkboard high moisture resistance.

Does Not Shrink, Swell, or Settle—Because of its low moisture absorption, Armstrong's Corkboard does not shrink, buckle, or swell. It lies flat, and will not settle.

Fire Retarding — Armstrong's Corkboard is a positive fire-retardant. A flame will ignite it, but it burns slowly and when the flame is removed, combustion ceases.

Structurally Strong—Armstrong's Corkboard has a firm body and good structural strength. It affords a substantial base for finishing materials.

Does Not Disintegrate — Armstrong's Corkboard is not subject to deterioration through decay, mold, or other structural change. It will not disintegrate in service.

Sanitary—Armstrong's Corkboard is structurally non-absorbent, does not mold or decay. It is free from objectionable or contaminating odors.

Sizes and Thicknesses—Armstrong's Corkboard is furnished in rigid boards, 12″x36″, 12″x32″, 18″x36″, 24″x36″, and 36″x36″ in several thicknesses: 1″, 1½″, 2″, 3″, 4″, and 6″.

Easily Installed—Armstrong's Corkboard is rigid and may be cut, sawed, and nailed in place as easily as lumber. It forms a secure bond when erected against masonry walls in a backing of portland cement mortar or in Armstrong's Erection Asphalt against Armstrong's Asphalt Priming Paint.

Reasonable Cost—The price of Armstrong's Corkboard is reasonable and it is inexpensive to install.

CORKBOARD INSULATION FOR HOUSES AND BUILDINGS

Thicknesses Required

For ordinary construction of a house or building, 1½″ corkboard is generally recommended for walls and 1½″ or 2″ corkboard provides adequate ceiling or roof insulation. The use of these thicknesses with good construction methods can generally be counted on to effect savings of 25 to 35% in heating costs.

Sizes and Thicknesses Available

Armstrong's Corkboard is made in boards—12″x36″, 12″x32″, 18″x36″, 24″x36″, 36″x36″. Each size may be obtained: 1″, 1½″, 2″, 3″, 4″, or 6″ thick.

SPECIFICATIONS

Frame Construction

Wall Insulation—Insulation for walls shall be ...x... (give size) and...in. thick (give thickness).
Note: Under average conditions, use 1½″ thickness.

Ceiling Insulation—Insulation for ceilings shall be ...x...in. (give size) and...in. thick (give thickness).
Note: Under average conditions, 1½″ or 2″ thickness is recommended for top floor, ceiling or roof.

Roof Insulation—Insulation for roofs shall be ...x...in. (give size) and...in. thick (give thickness).
Note: Under average conditions, use 1½″ or 2″ thickness.

Nails for attaching corkboard insulation in frame construction shall be common galvanized or casing wire nails of sufficient length to pass through the corkboard and penetrate the wood 1″.

General

The corkboard insulation shall be applied in a continuous sheet covering the surfaces to be insulated.

Corkboard shall be laid with all joints driven tight, each successive course breaking joints over those below.

Corkboard shall be accurately sawed to fit snugly into all spaces not covered by the full sized sheet.

The length of the corkboard sheets shall run at right angles to the structural wood members with end joints centering over the studs, joists, or rafters.

Masonry Construction

Mixtures—(1) For Masonry Wall Insulation—Mortar for backing shall be mixed in the proportions of 1 part of portland cement to 3 parts of sand.

(2) For Underside of Fireproof Roofs, Floors, and Ceilings—Mortar for backing shall be mixed in the proportions of 1 of portland cement to 2 of sand.

Note: Corkboard may be applied to suspended metal lath ceilings in this backing—on special applications consult nearest Armstrong office.

Corkboard insulation of size and thickness previously specified shall be installed where required as follows:

On Inside Face of Masonry Walls—Corkboard shall be attached to the masonry surface in a ½″ backing of portland cement mortar.

Over Fireproof Roofs Under Slate, Tile, or Metal—Corkboard shall be attached to (sleepers, grounds, or roof surface?) with 6 nails to each sheet (2 to each bearing). Cover with waterproof paper as soon as laid.

Over Fireproof Roof Slabs, Under Built-up Roofing on Flat Surfaces—The roof surface shall first be flooded with hot pitch or asphalt.

The corkboard shall be laid in the hot roofing compound, shoved into place so as to fill the end and side joints with pitch or asphalt in one operation. Cover with the finished roofing as soon as laid.

Under Reinforced Concrete, Fireproof Roof, Floor or Ceiling Slabs—The forms for the slabs, beams, girders, etc., have been constructed to allow for a lining of corkboard. Clean forms of all loose materials. Before the reinforcing metal and concrete are placed, line the forms with a continuous lining of corkboard. Into the corkboard, drive galvanized wire nails obliquely 2 to the square foot, which shall protrude 1½″ to anchor the corkboard to the concrete when poured.

INSULATION OF AIR CONDITIONED BUILDINGS

To insure efficient and economical operation of an air conditioning system, both the walls and roof of a structure must be protected with an adequate thickness of efficient insulation. Insulation brings direct all-year economy in air conditioned buildings because winter fuel savings alone justify the cost of the insulation. Summer refrigeration savings add materially to this economy since cooling costs are, ordinarily, considerably higher than heating costs.

Thicknesses Recommended

Corkboard is made in thicknesses of 1″, 1½″, 2″, 3″, 4″, and 6″, so that a single thickness of insulation may be economically applied in one operation to provide the requisite efficiency for a definite investment return. The 1½″ thickness is generally recommended for walls, while an adequate thickness for the roof may be from 2″ to 4″, depending on the roof deck construction, climatic conditions, and costs of fuel and refrigeration.

Corkboard insulation for air conditioned structures should be installed by the methods suggested above.

Insulation of Air Conditioning Equipment

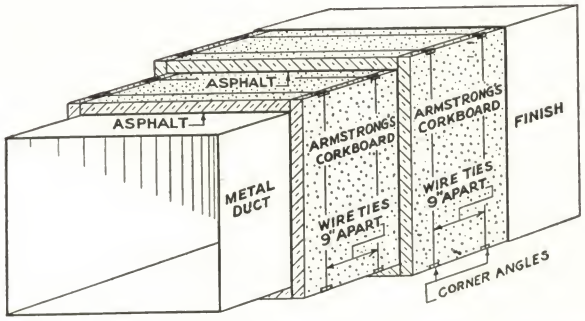
For efficiency and economy of operation, large compressor units, pumps, cold water storage tanks, housings for cold water sprays and cold air ducts, are generally insulated with corkboard. Cold lines are insulated with cork covering, fitting covers, and cork lagging.

Noise resulting from vibration of motors, pumps, and fans, is readily transmitted through air ducts and it is therefore practical to isolate the foundations of all machinery used in the system with Armstrong's Vibracork.

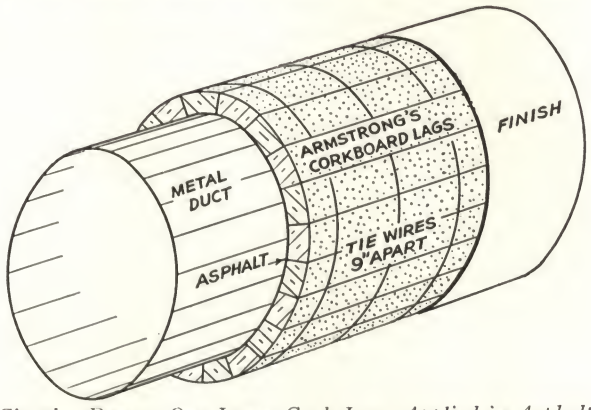
Corkboard Adapted for Fireproof Construction

Since Armstrong's Corkboard adds no fire hazard, it is especially well suited to use in skeleton steel or concrete fireproof construction, with its moderately thin heat-conducting exterior curtain walls.

INSULATION OF DUCTS, RECTANGULAR OR CIRCULAR



Square and Rectangular Ducts—Two Layers of Corkboard Applied in Asphalt



Circular Ducts—One Layer Cork Lags Applied in Asphalt

Cold air ducts passing through warm rooms or areas should be insulated with Armstrong's Corkboard to check possible condensation, and to limit heat absorption thus assuring delivery of the conditioned air at the temperature desired. Ducts, depending on conditions of service, are usually insulated with from 1″ to 3″ of Armstrong's Corkboard.

The surfaces of metal ducts must be cleaned of dirt, dust, and grease. Apply Armstrong's Corkboard against the duct in waterproof cement or hot asphalt and additionally secure it in place with wires or banding material on 9″ centers, drawn tightly around the insulation. An angle type corner protection should be used to prevent wires or bands from cutting into the insulation. All joints of the corkboard must be tight. In case two or more layers of insulation are used, joints in the successive layers should be staggered.

If desired, the exterior surface of the duct insulation may be finished with portland cement plaster or Armstrong's Asphalt Plastic Finish.

Circular ducts may be insulated with Armstrong's Cork Lagging. The lagging, properly beveled to fit the duct, should be applied in hot asphalt with each lag toenailed to the abutting one with treated wood skewers of proper length. The insulation should be additionally held in place with wires or banding on 9″ centers drawn tightly around the duct. All joints must be tight. Smooth any uneven edges and corners. Finish as above.

ISOLATION OF EQUIPMENT WITH VIBRACORK

Practically any type of machine may be isolated with Vibracork, two methods of application being most generally used. In the first, the foundation pit is finished with concrete and then lined on both bottom and sides with Vibracork of the proper thickness and density, set in hot asphalt. The Vibracork is waterproofed and the concrete foundation block poured in. This construction is highly recommended for heavy machinery.

In the second method, Vibracork is applied directly between the machine's bed plate and the floor or foundation to which it is fastened. In most cases the Vibracork must be applied over a limited area only in order that sufficient compression may be obtained.

Sections of these typical isolation methods are shown in Figs. 1 and 2. The method shown in figure 1 is especially suited for heavy machinery.

Fourteen typical methods of application are illustrated with sectional drawings in the new 12-page booklet, "How to Lessen Vibration with Armstrong's Vibracork"—a copy will be sent upon request.

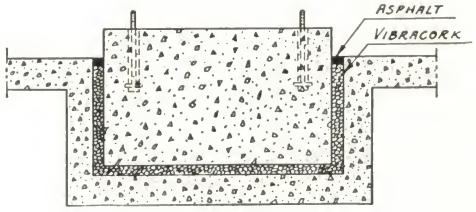


Fig. 1

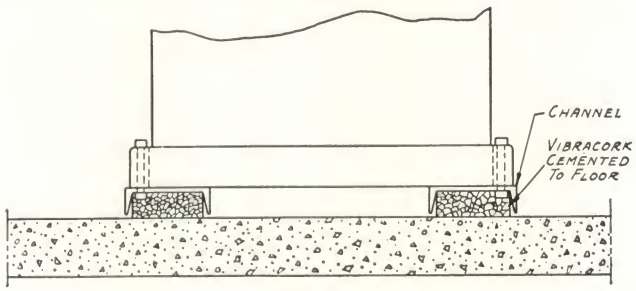


Fig. 2

ARMSTRONG'S CORKBOARD FOR COLD STORAGE WORK

Cold storage construction is highly specialized and is not covered in detail in this catalog. Complete technical information and advice are available through engineers in Armstrong branch offices, listed on page one of this catalog and through Armstrong representatives. For detailed specifications on cold storage room construction, ask for the booklet, "Armstrong's Corkboard Insulation for Cold Storage Rooms."

General Information

Armstrong's Corkboard Insulation for cold storage rooms is available in the following sizes: 12″x36″, 18″x36″, 24″x36″, and 36″x36″. Standard thicknesses are 1″, 1½″, 2″, 3″, 4″, and 6″.

The worst enemy of insulation in cold storage construction is air infiltration with its consequent deposit of moisture at zones within the insulation where the temperature is below the dew point. To overcome severe conditions of this type, Armstrong has developed what is known as Super-Service Corkboard. This extra efficient corkboard is imperviously sealed on both faces with a special asphalt mastic coating ironed on at the factory. Armstrong's Super-Service Corkboard is made in boards 12″x36″ in the following thicknesses: 1½″, 2″, 3″ and 4″.

Thickness of Insulation to Be Used

The cost of insulation and refrigeration determines the economic thickness of insulation. Generally speaking, the following thicknesses are recommended in the temperate zone:

Room temperature	Recommended thickness	Room temperature	Recommended thickness
45° F. and above	2″	5° F. to 20° F.	5″
35° F. to 45° F.	3″	— 5° F. to + 5° F.	6″
20° F. to 35° F.	4″	—20° F. to — 5° F.	8″

Approximated Storage Temperatures

Fruits (not frozen) except bananas (limes and lemons, slightly higher) ..... 30°–40° F.
Fresh vegetables ..... 32°–40° F.
Furs (dressed) ..... 25°–28° F.
Eggs (not frozen) ..... 29°–32° F.
Cheese ..... 32°–42° F.
Fresh meats (pork products, 25°–28° F.) .. 28°–33° F.
Miscellaneous food products: Cereals, dried fruits, vegetables, nuts, canned goods, etc. .. 32°–40° F.
Plants, nursery stock, and flowers ..... 28°–32° F.
Cut flowers ..... 36°–50° F.

Application of Insulation

In view of the harmful effects of air infiltration, it is important that walls, and particularly exterior walls, be made as airproof as possible. If a brick wall construction is used, a good hard vitrified brick will give the best results.

To airproof a structural wall to which insulation is to be applied, plaster it with ½″ portland cement plaster and then prime it with one or two coats of Armstrong's Asphalt Priming Paint, depending on the porosity of the surface and the severity of conditions to be met. Before applying Armstrong's Asphalt Priming Paint the plaster must be dry enough to permit penetration by the paint.

Armstrong's Asphalt Priming Paint has a high film strength; does not flow at maximum wall temperatures; penetrates into the pores of the wall when applied by either spray or brush; and furnishes the maximum of weatherproofing. It does not crack or deteriorate with age but rather increases in effectiveness.

The bond of the insulation to the film of the priming paint is secured through the medium of erection asphalt. Armstrong's Erection Asphalt is tough and strong; it has a minimum susceptibility to temperature changes; it is not subject in itself to further chemical change; it keeps its good qualities over a long period of time; and it handles well in the present-day methods of erecting insulation. It is a special odorless asphalt developed for cold storage work.

Portland cement plaster for the interior finish of cold storage rooms is rapidly being displaced by Armstrong's Asphalt Plastic Finish using Armstrong's Asphalt Emulsion as a base material.

Armstrong's Asphalt Plastic Finish resists the passage of air and moisture more effectively than portland cement plaster and is better suited to conditions of high humidity. It is a cold asphalt mastic that can be easily applied with a trowel, it is odorless, bonds well to the insulation and serves efficiently under cold storage conditions.

Where drying conditions are not suitable for emulsion, Armstrong's Mastic Finish Corkboard should be used. Armstrong's Mastic Finish is applied to the corkboard at the factory. Two hot coats of fluid mastic are ironed on under pressure and this finish will satisfactorily withstand temperatures as low as —25° F. without cracking.

Armstrong's White Cold Storage Paint and Armstrong's Aluminum Paint are available for use over mastic finish or asphalt plastic finish. These provide high light reflecting surfaces and both paints adhere firmly to the surface and do not crack at low temperatures.

The Armstrong Cork Products Company is equipped to contract for the erection of insulation as well as for the sale of insulation and erection sundries. Jobs of any size are handled promptly and efficiently and usually at less cost and in shorter time than local contractors can do the work. Competent and experienced erection crews are maintained at all branches and by representatives.

ARMSTRONG'S CORK COVERING FOR COLD LINES

In practically all installations of mechanical cooling, the refrigerating machine is at some distance from the cold rooms, which means that the lines carrying the refrigerant are exposed to higher temperatures. It is essential that these lines be thoroughly insulated, not only to increase the efficiency of the machine, but also as a measure of economy. In many cases, refrigeration losses from exposed cold lines amount to more within a year than the cost of cork covering that will serve efficiently for many years.

Armstrong's Cork Covering, which supplements the insulation furnished in board form, provides efficient and durable protection for all cold lines. In the manufacture of Armstrong's Cork Covering, clean granules of cork are compressed in molds of the proper shape for various sizes of pipes and fittings, and then baked. The baking process knits the granules closely together, insuring low conductivity and structural strength. The covering is coated at the factory with a heavy asphalt mastic finish. Inside surfaces are carefully machined, resulting in a snug fit on the pipe and the elimination of moisture-attracting air spaces between the pipe and the insulation where frost could form.

Armstrong's Cork Covering is supplied in molded covers for practically all standard, screwed, and flanged fittings, and in 36″ split sections for straight pipe runs of the sizes ordinarily used.

Armstrong's Cork Covering is made in three thicknesses:

1. Special Thick Brine, from 2.63″ to 4.00″ thick, for cold lines where the temperature ranges from 0° F. to —25° F., or where the surrounding temperatures are unusually high, as in boiler rooms or adjacent to steam lines, and in tunnels or pipe shafts.
2. Brine Thickness, from 1.70″ to 3.00″ thick, designed for brine, ammonia, carbon dioxide, or any low temperature gas or liquid lines where the refrigerant ranges from 0° F. to 35° F., or where, with the temperature of the refrigerant within these limits, the difference in temperature between the refrigerant and the surrounding air is not in excess of 100° F.
3. Ice Water Thickness, 1.20″ to 1.93″ in thickness, intended for use on refrigerated drinking water and other cold lines, and generally where temperatures of 35° F. and upward are carried.

For larger sizes of pipes and fittings, Armstrong's Cork Covering is furnished in the form of lagging beveled to the proper radius, and in any thickness for the insulation of tanks and other cylindrical cold surfaces.

Covering for Drinking Water Lines

Refrigerated drinking water systems have, in recent years, become firmly established not only as a modern convenience, but as a requisite of economy and efficiency in hotels, office buildings, mills, and factories, and in all types of public and semi-public buildings.

Armstrong's Cork Covering in ice water thickness is especially adapted for the insulation of the distributing lines and apparatus. It is neat in appearance, moisture-resistant, and fire-retardant. Its high insulating efficiency insures a minimum use of refrigeration, and its durability is a guarantee of long life in service.

TABLE OF PROPER SPACING	Space required between parallel pipes, ins.	Space required between pipes and adjacent surfaces, ins.
BRINE THICKNESS		
Screwed Fittings up to and including 6-inch.	8	6
Screwed Fittings larger than 6-inch.....	14	8
Flanged Fittings.....	14	8
SPECIAL THICK BRINE		
Screwed Fittings up to and including 3-inch.	10	8
Screwed Fittings larger than 3-inch.....	18	12
Flanged Fittings.....	18	12
ICE WATER THICKNESS		
Screwed Fittings up to and including 6-inch.	6	4
Screwed Fittings larger than 6-inch.....	10	5
Flanged Fittings.....	10	5

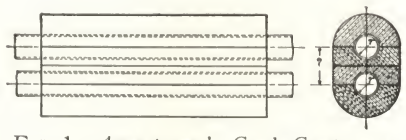


FIG. 1—*Armstrong's Cork Centers as applied on lines too close together for the regular covering*

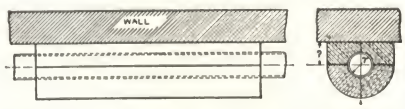


FIG. 2—*Armstrong's Cork Centers on line close to a wall or ceiling surface*

ARMSTRONG'S TEMLOK INSULATION

ARMSTRONG'S TEMLOK is an efficient, low cost, fibreboard insulation fabricated from the heartwood fibres of the long leaf southern yellow pine. It has behind it Armstrong's insulation experience, engineering skill, and manufacturing ability.

Moisture resistance is an outstanding characteristic of the resin-impregnated fibres of the southern yellow pine. For many decades, Nature has stored up resin in the pine tree stumps which cover millions of acres of cut-over lands in Louisiana, Georgia, Alabama, and Florida. Great naval stores companies extract this natural resin for commercial purposes—but there is left as a residue a vast supply of heartwood pine fibres, still containing sufficient resin content to give them a high resistance to moisture and prevent deterioration.

Thus Armstrong's Temlok, fabricated from these heartwood pine fibres, provides efficient and durable insulation at low cost. It is furnished in a number of forms for general building purposes, as well as for insulation of domestic refrigerators and various industrial uses.

Temlok Building Insulation Products are distributed through retail lumber dealers. Temlok Roof Insulation and Temlok Refrigerator and Equipment Insulation are sold by Armstrong branch offices and representatives.

This attractive office has Temlok Insulating Tiles on the ceiling, Temlok Beaded Plank on the walls, and a wainscoting of Temwood

Physical Characteristics

Physical characteristics of Temlok are as follows:

(1) Low Coefficient of Thermal Conductivity—Temlok's conductivity is .33 B.t.u. per square foot, per inch thickness, per degree Fahrenheit temperature difference, per hour.

(2) Low Moisture Absorption—Based on the 30-minute absorption test, as specified by the U. S. Bureau of Standards, Temlok's moisture absorption is exceptionally low.

(3) Structural Strength and Rigidity—Since Temlok is made in a rigid board it possesses ample structural strength for every requirement.

(4) Light Weight—Temlok combines light weight and structural strength in one material.

(5) Pleasing Appearance — Golden buff in color, Temlok presents an attractive appearance when walls are left unfinished. Temlok also can be painted or stained to harmonize with any decorative scheme.

(6) Good Base for Plaster—Temlok grips plaster, forming a permanent bond. Temlok Insulating Lath guards plaster against unsightly cracks which disfigure finished appearance of interior of a residence. Being installed so that all vertical joints are staggered, a continuous insulation surface is provided.

(7) Ease of Application—Temlok is easily sawed and nailed in place and is furnished in boards of convenient size for handling on the job.

(8) No Odor—Temlok is odorless and does not promote mold or bacterial growth.

(9) Uniform Quality—Constant checks and tests during the manufacturing process assure maintenance of uniform quality.

(10) Durability—Because of its high resistance to moisture, Temlok retains its insulating efficiency for many years.

Note: Temlok meets Federal Specification LLL-F-321 for Fibreboard; Insulating, Structural, as approved May 31, 1935.

Temlok Insulating Lath provides an excellent plaster base. Use of this efficient material insures fuel savings and year-round comfort

Temlok Insulating Lath, Board, and Sheathing

Temlok Insulating Lath, Board, and Sheathing are supplied in the following sizes and thicknesses.

Insulating Lath—Temlok Insulating Lath is furnished in boards 18″ wide and 48″ long, in ½″, 1″ and 1½″ solid thicknesses, with grooved edges on four sides and ship-lapped long edges. Material contained in bundles of Temlok Insulating Lath is as follows: ½″, 15 pieces or 90 sq. ft.; 1″, 10 pieces or 60 sq. ft.; 1½″, 5 pieces or 30 sq. ft.

Insulating Board — Temlok Insulating Board is furnished in boards 4′ wide by 6′, 7′, 8′, 9′, 10′, and 12′ long, in both full ½″ and full 1″ thicknesses.

Sheathing—Temlok Insulating Sheathing is furnished in boards 16″ and 18″ wide by 8′, 9′, 10′, and 12′ long, in both full ½″ and full 1″ thicknesses.

Temlok Interior Finish

Providing a pleasing decorative treatment and sound-absorbing properties, as well as high insulating value, Temlok Insulating Panels, Tiles, and Planks, as well as accessories such as border strips, moldings, and battens, are available for interior finish.

The natural warm buff color of Temlok lends itself nicely to interior treatments. Temlok Tiles and Planks also are available in various tints, obtained by means of faint color stains, which are not faded by sunlight. Shades available are: natural, golden oak, cedar, and slate. The difference in coloring is so slight that the effect is noticeable only by contrast, when the various tints are used in combination. While the use of stained Temlok adds greatly to the attractiveness, the colors are so faint that they will not affect any interior color scheme desired.

Temlok Products for interior finish are:

Temlok Insulating Panels—Furnished in the following standard sizes: 16″x32″, 18″x32″, 16″x48″, 18″x48″, and 24″x48″. Thicknesses are full ½″ and full 1″. The panels are beveled with a ¼″ bevel on all four sides and are ship-lapped along the long edges. Panels are furnished with the standard Temlok texture, but can be sanded when specified. Colors: natural, golden oak, cedar, and slate.

Temlok Insulating Tiles—Furnished in the following standard sizes: 6″x6″, 6″x12″, 8″x8″, 8″x16″, 12″x12″, 12″x24″, 16″x16″, and 24″x24″. Thicknesses full ½″ and full 1″. Tiles are furnished with the standard Temlok texture, but can be sanded when specified. Colors: natural, golden oak, cedar, and slate.

Note: Panels and tiles furnished in other sizes and with joints according to specifications.

Temlok Beaded Planks—Furnished 6″, 8″, 10″, 12″, and 16″ wide by 6′, 8′, and 10′ long. Thicknesses are full ½″ and full 1″. Colors are natural, golden oak, cedar, and slate.

Temlok Border Strips—Used for finishing the border of a tiled ceiling. Temlok Border Strips are 15″ wide by 8′ long. One long side and two edges have a ⅜″ bevel. Thicknesses are full ½″ and full 1″. Available in standard surface and natural color. Furnished sanded when specified.

Temlok Moldings—Seven types of standard moldings are available. Corner moldings can be made by using a combination of the various types.

Temlok Battens—For use in connection with Temlok Insulating Board as interior finish, battens are supplied in strips 1¾″, 2½″, and 3½″ wide by 7′, 8′, 9′, and 10′ long.

Temlok Roof Insulation

Temlok Roof Insulation is furnished in boards 22″x47″ in both ½″, 1″ and 1½″ thicknesses in homogeneous boards. Greater thicknesses are stapled or cemented. Temlok Roof Insulation possesses the same desirable properties that are features of all Temlok products. It provides a firm protective base for roofing and is easily and economically installed.

DIRECTIONS FOR APPLYING TEMLOK

(1) Temlok Insulating Board

Application—Apply Temlok Insulating Board lengthwise with studding, ceiling joists, or rafters set 12″ or 16″ on center. Space all sheets ¼″ apart at all edges. Never force into place.

(a) Temlok Used as Sheathing—

Nailing—Use 1½″ galvanized roofing nails for ½″ board and 2″ nails for 1″ board, spacing 4½″ apart. Nail to intermediate frame members first. Then nail edges and ends. Place headers beneath joints where Temlok sheets meet.

Wood Siding—Apply directly over Temlok, butting all siding joints on studs. Nail through Temlok into studs.

Shingles—Apply wood strips over Temlok at right angles to studs or rafters. Space strips as many inches apart as shingles are to be exposed to weather.

Brick Veneer—Nail brick ties through Temlok to studs. Lay up brick in usual manner, keeping ½″ space between brick and Temlok.

Stucco—Over Temlok apply galvanized self-furring wire or metal lath. Mix and apply stucco according to manufacturer's specification. Caution: Do not use stucco directly on Temlok.

Exterior Finish—Apply as directed for sheathing, using galvanized nails for intermediate studs and roofing nails at edges. Length of nails as indicated above. Paint according to painting specifications as given, and cover all joints with wood battens.

(b) Temlok Used as Wallboard—

Nailing—Nail first to intermediate frame members, using 1½″ finishing nails for ½″ board and 2″ finishing nails for 1″ board, spaced 8″ apart. Drive nails at slight angle and set slightly below the surface of the Temlok. Where panel strips are used, nail edges with same length box nails, setting nails ⅜″ away from edges.

Painting—Size surface with suitable oil, glue, or water size before applying oil paints. Where special wall finishes are to be used, place headers where sheets meet. When acoustical correction is particularly desired, Temlok must not be painted or sized. It may be stained.

Staining—Acid, benzol, alcohol, oil, or any other type of penetrating stain may be applied to Temlok. Apply according to manufacturer's specifications. Sizing is not necessary with any kind of stain. Caution: Water stains may cause warping.

Paneling—After finishing the Temlok, any desired paneling effect may be obtained by using Temlok Insulating Battens or wood battens over all joints and elsewhere necessary to obtain the desired design.

Wall Paper—Do not apply wall paper directly to Temlok.

(2) Temlok Insulating Lath

Application—Apply Temlok Insulating Lath with long edges at right angles to studding, ceiling joists, or rafters set 12″ or 16″ on centers. Center all end joints on the framing and stagger joints of each course. Space sheets ¼″ apart at ends. Never force into place.

(a) Temlok Used as Plaster Base—

Nailing—Nail Temlok Lath securely at every support with five galvanized or coated box nails 1⅛″ long for ½″ lath, 1¾″ long for 1″ lath, and 2½″ long for 1½″ lath. Nail to intermediate frame members first. Then nail ends.

Plastering—Reinforce plaster at all interior corners, also where frame and masonry walls meet, with metal lath and reinforce the exterior corners with corner beads. Do not moisten Temlok after nailing.

Use a quick-setting gypsum plaster. Do not use lime plaster or mix lime with gypsum plaster in scratch or brown coats. First coat or scratch and brown coat together must never be less than ⅜″ thick and must be thoroughly dry before applying the finish coat. The finish coat thickness must not be over ⅛″. Apply the plaster directly to Temlok; force plaster well into board joints. Darby strokes must be in the directions of joists and studs, care being used to span two joists or studs with rod or darby. Always follow plaster manufacturer's specifications when given.

(b) Temlok Used as Interior Finish (Without Plaster)—

Nailing—Nail first to intermediate frame members, using 1½″ finishing nails for ½″ lath, 2″ finishing nails for 1″ lath, and 2½″ finishing nails for 1½″ lath, spaced 4″ apart. Butt all joints. Do not force into place. Drive nails at a slight angle and set slightly below the surface of the Temlok.

Painting—(See above under Use as Wallboard.)

Staining—(See above under Use as Wallboard.)

(3) Temlok Insulating Panels, Tiles, and Planks

When a base other than plaster is to be provided for the application of panels or tiles a continuous wood nailing base of lumber 4″, 6″, or 8″ wide matched $\frac{25}{32}$″ thick may be provided, or wood furring strips 1″x2″ shall be applied to the framing members so disposed as to provide a firm nailing base for at least two opposite edges of all units. Spacing shall in no case exceed 16″ on center.

Over a plaster base Temlok Insulating Panels (or tiles or planks) shall be applied in Armstrong Cement No. 306. The cement shall be spotted on the tile according to manufacturer's specification, due care being exercised to prevent cement from appearing on the exposed finished side. The units shall be slipped into position level and true.

When nailing over a plaster base the panels (or tiles or planks) shall be nailed in position using 5d casing nails for ½″ units and 6d for 1″ with two casing nails in each corner and additional casing nails 5″ apart. Drive casing nails at an angle and set heads slightly below the surface.

When nailing over framing and furring strips or continuous backing, nail panels (or tiles or planks) in position, using two nails at each corner and additional casing nails 5″ apart. Drive casing nails at a slight angle and set heads neatly below the surface of the material. Panels should be set with the long side at right angles to framing and furring strips.

Note: Since the Temlok surface is the finish, it is necessary for the framing members to present a true and level surface for the application of the Temlok.

(4) Temlok Roof Insulation

Set boards reasonably close together regardless of type of deck.

Temlok may be set dry, or with asphalt or pitch. If asphalt is used on concrete, prime deck with asphaltic paint.

In cases where condensation is likely, use 30-lb. saturated felt sealed over deck before installing Temlok.

Where two or more ½″ thicknesses are specified, mop with hot asphalt or pitch between layers.

ARMSTRONG'S HARD AND SEMI-HARD BOARDS

Armstrong's Temwood is a fabricated wood board especially adaptable for a wide variety of uses. It is all wood, containing no binder. Temwood has a hard, smooth surface and is grainless, exceptionally strong, rigid, and durable.

Temwood is ideal for wall and ceiling paneling in new construction and remodeling, exterior walls and roofs in temporary construction, display cases, and window backgrounds, built-in kitchen cabinets, table tops, bars, and countless other uses.

Temwood's hard, smooth surface holds paint, enamel, lacquer, varnish, or stain equally as well as metal or wood.

Temwood is furnished in boards, ⅛″ and $\frac{3}{16}$″ thick; 4′ wide and 6′, 8′, 9′, 10′, and 12′ long; and in boards ¼″ and $\frac{5}{16}$″ thick in 12′ lengths only.

Tempered Temwood is ideal for the construction of concrete forms and for use where the material will be subjected to great strain, abrasion, or moisture. It is manufactured in the same sizes and thicknesses as Temwood.

Temwood Tile is a material for interior decoration made of Tempered Temwood. It is furnished in ⅛″ and $\frac{3}{16}$″ thicknesses, in 4′x12′ panels, with indentations compressed in the surface. When finished, the effect of 4″x4″ tile is produced. The surface may be decorated any desired color.

Armstrong's Temboard is a grainless, all-wood wallboard. It is a structural and decorative material and is strong, dense, and rigid. It is made in boards full ¼″ thick, 4′ wide by 5′, 6′, 7′, 8′, 9′, 10′, and 12′ long. Temboard may be stained, painted, enameled, varnished, or used as a base for plastic paint or wall paper.

Armstrong's Temboard De Luxe is similar to Temboard but of less thickness and of much greater weight, strength, density, and rigidity. It is also more highly finished. It is furnished in boards 4′ wide by 6′, 8′, 9′, 10′, and 12′ long.

SPECIFICATIONS FOR INSTALLING ARMSTRONG'S TEMLOK INTERIOR FINISHES ON WALLS AND CEILINGS

APPLICATION OF TEMLOK INSULATING BOARD AND PLANKS

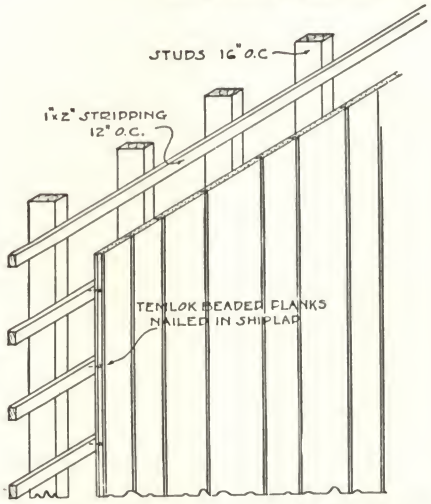


FIG. 1—*Application of Temlok Beaded Planks on Stripping*

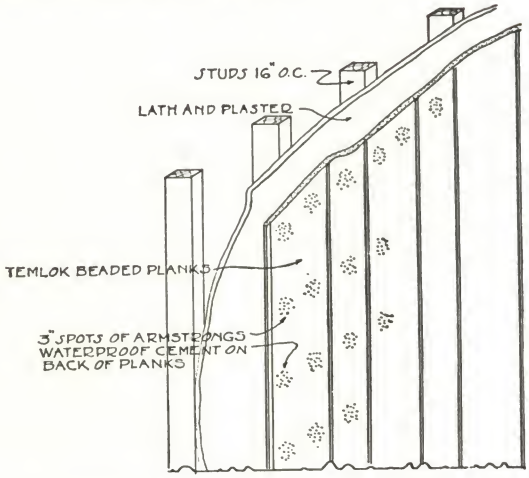


FIG. 2—*Application of Temlok Beaded Planks on Plaster*

(1) Framing—

Space framing as may be necessary to meet layout of interior finish but not over 12" or 16" on centers.

Provide bearings for all edges of the Temlok Insulating Board or Planks and insert headers back of wainscot caps, chair rails, baseboards, and other heavy wood trim. Use straight lumber of uniform thickness.

Fur masonry walls similarly with 1"x2" strips shimmed to a true, level plane.

(2) Application—

Apply Temlok Insulating Board or Planks with length parallel to framing members and all edges centered upon supports. For exposed joints bring boards or planks to moderate contact. Do not force into place.

Where nailing is to be covered use standard ⅜" head, 1½" galvanized roofing nails for ½" Temlok Insulation and 8d common nails for 1" thickness. Where nailing is to be exposed, use 1½" finishing nails for ½" Temlok Insulation and 2" finishing nails for 1" thickness.

Nail first to intermediate framing members, then along all edges. Space nails 6" apart on intermediate framing and 3" apart and ⅜" in along all edges. Where nailing is exposed, drive finishing nails at an angle and set the heads neatly below the surface of the Temlok Insulation.

Note: Where called for, edges of the Temlok Insulation shall be beveled or rounded and surface shall be "V" grooved or carved before the Temlok Insulation is applied.

(3) Finishing—

Apply battens and trim over the Temlok Insulation with nails of sufficient length to pass through the Temlok and at least 1" into the framing members. If the Temlok is to be painted, this should precede application of battens and trim.

Apply paints, stains, plastic paints, wall coverings, and stencil decorations in accordance with Specification No. 3.

APPLICATION OF TEMLOK INSULATING TILES AND PANELS

(1) Bases to Receive Tiles or Panels—

(a) Framing—Space framing 12" or 16" on centers as may be necessary, to meet layout and sizes of the Temlok Insulating Tiles or Panels. Insert headers back of wainscot caps, chair rails, baseboards, and other heavy wood trim. Use straight lumber of uniform thickness. Fur masonry walls or plastered walls similarly with 1"x2" strips shimmed to a true level plane.

(b) Cross Furring—Apply 1"x2" furring strips directly to and at right angles with framing so disposed as to provide a firm nailing base for at least two opposite edges of all units. Spacing shall in no case exceed 16" on centers.

(c) Continuous Wood Nailing Base—Cover framing with continuous wood nailing base, 4", 6", or 8" wide, matched, $\frac{25}{32}$" thick.

(d) Plaster—Plastered surfaces must be sound and level when Temlok Insulating Tiles or Panels are to be applied directly thereto.

(2) Application—

(a) Nailing—Bring Temlok Insulating Tiles or Panels to moderate contact. Do not force into place. Use casing or finished nails 4, 5, or 6 penny, depending upon thickness of units, zinc coated where high humidities are prevalent. Place two nails at each corner and additional nails 5" on center for larger units, drive straight or at a slight angle, and set heads neatly below the surface.

Note: For application to plaster by nailing only, use somewhat longer nails driven at a 45° angle.

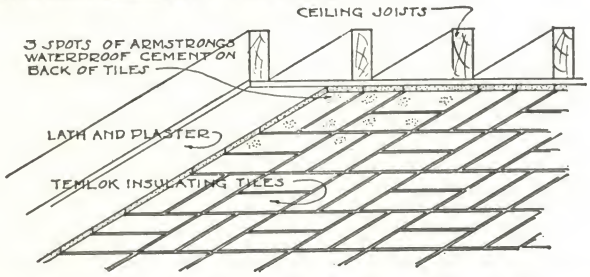


FIG. 3—*Application of Temlok Insulating Tiles on Plaster*

(b) Cementing and Nailing—Where Temlok Insulating Tiles or Panels or Planks are to be applied to continuous backing (wood or plaster) by cementing and nailing, place 3" spots of Armstrong's Waterproof Cement No. 306 on the back surface of the tiles or panels near each corner with additional spots approximately 10" apart on larger units. Exercise care to prevent adhesive from appearing on exposed surface. Slide the units into place, level and true, and nail in position with two nails at each corner and additional nails 5" on centers for large units. Set nail heads neatly below the surface.

(3) Finish—

Apply paints, stains, and stencil decorations in accordance with Specification No. 3.

ARMSTRONG'S ACOUSTICAL MATERIALS

CORKOUSTIC 60—Sizes, Colors, Properties

Corkoustic is a pure cork acoustical material with a distinctive fissured surface that gives travertine-like effects. It is particularly adapted to use in schools, auditoriums, churches, hospitals, offices and restaurants.

Sound-Absorption Efficiency—61% at a frequency of 512. It is approved by authorities on sound control and has proved entirely successful in hundreds of applications.

Installation—Corkoustic 60 is installed with Armstrong's Linoleum Paste; Armstrong's Acoustical Adhesive No. 400; Armstrong's No. 306 Waterproof Cement; or by nailing.

Sizes—Corkoustic 60 is available in sanded, beveled tiles 1½" thick (⅛" or less tolerance allowed for sanding) in: Field tile: 6"x6", 6"x12", 9"x9", 9"x18", 12"x12", 12"x18", 18"x18", 9"x24", and 24"x24"; border tile: 5"x36", 5⅞"x36", 7"x36", 9"x36", 12"x18" and 12"x36." Special sizes to order. *Diagonal half tiles* cut from any regular square field tile size.

Louisville's Memorial Auditorium was made acoustically satisfactory by the application of Corkoustic. E. T. Hutchings, Louisville, Architect

Colors—Corkoustic 60 is available in natural cork brown, or factory-painted white, ivory, and buff with Armstrong's Acoustic Paint (oil base and washable). Special colors matched upon request.

Light Reflection—The incident light totally reflected from Corkoustic 60 finished with Armstrong's Acoustic Paint is: White, 86.9%; Ivory, 79.9%; Buff, 67.8%.

Weight—Less than 1 lb. per sq. ft. Expensive special fastening devices are unnecessary.

Structural Strength—Many times greater than is required to hold tiles true and rigid. Corkoustic 60 does not buckle or warp.

Cleanliness—Corkoustic 60 is cellular in composition. Thus air cannot readily blow through it and leave a layer of dirt filtered out on the exposed surface. It has no loose fibers to attract or hold dirt.

Thermal Insulation—Corkoustic 60 offers highly efficient thermal insulation. Its thermal conductivity is .18 B.t.u. per sq. ft. per degree, per hour, for 1½" thickness.

Fire Resistance—Corkoustic 60 has satisfactorily passed standard fire tests of the University of Pennsylvania and the Massachusetts Institute of Technology.

Armstrong's Corkoustic in Westminster Presbyterian Church, Decatur, Ill. Note painted designs. Brooks, Bramhall and Dague, Architects

Wall treatment with Armstrong's Corkoustic in dining hall of Alpha Delta Phi Fraternity, University of Rochester. Bohacket and Brew, Architects

Various boards of fire underwriters have declared that in schools and other buildings, Corkoustic does not affect the fire insurance rates. It does not spread fire and is not damaged by water.

Washing and Painting—Can be done without damage or noticeable loss of efficiency. The average Corkoustic installation does not require washing more than once every six to ten years. It can be washed several times.

Durability—Corkoustic 60 does not shrink, swell, warp, or mold when exposed to changing humidity conditions or wetting. It does not attract or house vermin, germs, or odors. It is resilient and not unduly fragile.

Ease of Application—Since Corkoustic tiles are strong and firm, as well as light and easily handled, they are easy to apply.

Pleasing Texture—Made from individual particles of cork, no two tiles are exactly alike in pattern, thus eliminating mechanical regularity of texture.

SPECIFICATIONS FOR INSTALLING ARMSTRONG'S CORKOUSTIC 60

General Specifications—*Armstrong's Corkoustic 60 (natural cork finish or factory painted) shall be furnished and installed, in a design to be approved by the architect (or owner), in accordance with standard Armstrong specifications by a qualified contractor whose work has been approved by the* Armstrong Cork Products Company.

Note: Standard specifications for Armstrong's Corkoustic 60 available upon request.

Preparation of Sub-bases

The necessary parts of these specification data on the preparation of sub-bases may be embodied in the architect's specifications, followed by General Specifications above.

Plaster—In new construction the white coat should be omitted, but the brown coat should be true, even, and smooth. All plaster must be thoroughly dry and seasoned throughout. In old construction, all plaster must be well keyed to the lath. If white-coated, the bond of the white coat must be tight and substantial.

Any previous covering, or any finishes (water-paint, whitewash, etc.), must be completely removed. Oil paints or enamel, if judged to be of excellent quality, need not be removed but should be thoroughly scored and cut through to the plaster with a coarse No. 3 sandpaper.

Any cracks or holes should be repaired with patching plaster which, when dry and hard, should be sanded smooth and level. If the plaster is unduly porous or dusty, apply a size coat of Armstrong's Cork Tile Varnish or any other good spar varnish properly thinned.

Concrete—It is not advisable to erect Corkoustic 60 directly to bare, plastered, or painted concrete. On a concrete ceiling, stripping and furring are advisable. 2x4's on 36″ or not more than 48″ centers should be bolted to the ceiling with the 4″ face of the timbers parallel to the ceiling line. Expansion bolts or other suitable fixtures on 48″ centers may be used to anchor the strips. 1″x4″ finished and seasoned furring strips on centers not greater than 12″ should be nailed at right angles to the heavier timbers and positioned to coincide with the seams between the Corkoustic tile and to accommodate the border.

Building Boards—Hard-pressed building boards and boards having a core of plaster faced with smooth cardboard, installed in small sizes (16″x32″) can be used. Boards of laminated paper pulp (not waterproof) or loose-pressed fibrous boards are not recommended. The rough or "wire" side of the hard-pressed board should be turned outward, and the boards well face-nailed. If the joists are on centers greater than 12″, it may be necessary to insert cross-headers for ample face-nailing space.

Joinings between the boards should always be made on the joist and be left open at least 1/16″. All adjoining edges should be smooth and sanded after nailing. Nails should be driven flush with the face of the board, but without denting. Joinings between the Corkoustic tiles should never coincide with joinings between boards.

Wood Ceilings—Existing ceilings of solid wood must be even, tightly nailed, and of such a nature that there will not be undue expansion and contraction. All solid wood ceilings must be of finished lumber with boards having a face no greater than 3½″. If the surface has not been painted or stained and is unduly porous, a size of Armstrong's Cork Tile Varnish or any other good grade of spar varnish is advisable. Never apply Corkoustic 60 over green or unseasoned lumber or to boards not securely fastened.

Where the ceiling has not yet been installed, or where it is necessary to raze an old ceiling, Corkoustic can be applied to 1″x4″ finished and seasoned furring strips nailed to the joists (see "Concrete"). Such furring should be leveled. Double furring makes the leveling easier.

Metal Ceilings—Corkoustic 60 cannot be applied directly to ceilings of embossed, corrugated, or plain sheet metal. A subsurface of building board should replace the sheeting; or furring should be applied over the metal.

Beams—Usually the beams of a ceiling are not covered with Corkoustic, due to the cost of cutting and fitting.

Fixtures—In new construction, all wiring, switches, and junction boxes must be permanently installed before applying Corkoustic. But fixture canopies, hanging lights, and other portable equipment should be installed after the Corkoustic.

High-Humidity Rooms—In rooms of high humidity, such as natatoriums, the adhesive should be Armstrong's Waterproof Cement No. 306. Temcoustic 50 should not be used.

Note: A detailed layout drawn to scale for every job is advisable. The Armstrong Estimating Department will gladly furnish these to its accredited contractors.

Adhesives—Armstrong's Linoleum Paste can be used for Corkoustic tiles up to 12″x12″. For larger sizes, Armstrong's Acoustical Adhesive No. 400 (or Armstrong's No. 306 Waterproof Cement) is to be preferred.

Designs—Suggested designs are offered in "Secure Decoration and Acoustical Treatment with One Material" and in special bulletins, available upon request.

ARMSTRONG'S TEMCOUSTIC 50

Armstrong's Temcoustic 50 is a low-priced, textured acoustical tile 7/8″ thick with a sound-absorption coefficient (Acoustical Materials Assn.) of 55% at a frequency of 512. It is made from the fibers of the long-leaf yellow pine.

It is supplied painted in white, ivory, or buff. Special colors can be had upon request. It is a good heat insulator (thermal conductivity of .31 B.t.u. per sq. ft. per degree per hour, per inch thickness).

Sizes—12″x12″ and 6″x12″ only, 7/8″ thick. No half tile, border material, or other sizes. However, some beautiful effects can be obtained by using 1⅛″ thick Corkoustic borders with the 7/8″ Temcoustic field tile.

Installation—Temcoustic 50 should be installed with Armstrong's Waterproof Acoustic Cement No. 306, or Armstrong's Acoustical Adhesive No. 400. Nailing not recommended. Unpainted concrete and new unpainted plaster should be washed with a 10% solution of zinc sulphate. Oil-paint or enamels, if in good condition, should be thoroughly scratched with No. 3 sandpaper. Water-paint, dirt, grease, etc., should be removed.

High Humidity Rooms—In rooms of high humidity, such as natatoriums, Temcoustic 50 should not be used.

ARMSTRONG CORK PRODUCTS COMPANY

Building Materials Division . . . . LANCASTER, PA.

Corkboard Insulation

Cork Covering

Vibracork

Corkoustic

Temcoustic

Temlok

Temwood

Temboard

JOINTITE

CORK PRODUCTS

MUNDET CORK CORP.

NEW YORK, N. Y.

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MISCELLANEOUS SPECIALTIES

Mundet "Jointite" Cork Tile Flooring — **Mundet "Jointite" Bulletin Board**

Catalogs of these products of Mundet Cork Corporation are filed in other sections of SWEET'S CATALOG FILE (ARCHITECTURAL)

MUNDET CORK CORPORATION

450 Seventh Avenue, New York ● Insulation Factory, Hillside, N. J.

BRANCHES: ATLANTA, GA.; BOSTON, MASS.; BUFFALO, N. Y.; CHICAGO, ILL.; CINCINNATI, OHIO; DALLAS, TEX.; DETROIT, MICH.; HOUSTON, TEX.; KANSAS CITY, MO.; LOS ANGELES, CAL.; MEMPHIS, TENN.; NEW ORLEANS, LA.; PHILADELPHIA, PA.; ST. LOUIS, MO.; SAN FRANCISCO, CAL.
CANADA: MUNDET CORK AND INSULATION, LTD., Montreal, Toronto, Winnipeg, Vancouver
GREAT BRITAIN: London, England, MUNDET CORK PRODUCTS, LTD.

AGENTS: CLEVELAND, OHIO, C. S. Ross; BALTIMORE, MD., McCormick Asbestos Co.; CHARLOTTE, N. C., C. R. Howard; FREDERICKSBURG, VA., Fredericksburg Insulation Co.; HARTFORD, CONN., The Hartford Cement Co.; NASHVILLE, TENN., John Bouchard & Son; OKLAHOMA CITY, OKLA., Standard Roofing & Material Co.; PORTLAND, ORE., F. J. Leonard; PORTLAND, ORE., Pacific Asbestos & Supply Co.; SALT LAKE CITY, UTAH, L. A. Roser; SEATTLE, WASH., Pacific Asbestos & Supply Co., TULSA, OKLA., Standard Roofing & Materials Co.; UTICA, N. Y., Geo. Meisenberger; WASHINGTON, D. C., Asbestos Covering & Roofing Co.

●

Jointite TRADE MARK

CORK PRODUCTS

A COMPENDIUM OF INFORMATION ON THE USES OF CORK FOR INSULATION PURPOSES

- REFRIGERATION
- SOUNDPROOFING
- HEAT PREVENTION
- HEAT CONSERVATION
- VIBRATION DEADENING
- CONDENSATION PREVENTION

MUNDET CORK CORPORATION

CORK and its History...

In the land contiguous to the Western Mediterranean and comprising parts of Spain, Portugal and Morocco, grows an evergreen known as the Cork Oak *(Quercus Suber)*. This tree must survive a tremendous amount of heat since it grows in tropical and semi-tropical zones. Nature has provided for this by promoting a growth which covers the trunk and limbs of the tree and effectively insulates it against the intense heat. This growth (or bark) is the cork of commerce. At periodic intervals the trees are stripped of this bark, which is then processed, baled and shipped to manufacturing centers in Europe and the United States. Various manufacturing plants produce a multitudinous variety of cork products including cork insulation.

Cork has been used for many centuries. We find that it was fabricated by the ancients into shoe soles, floats and bottle stoppers. In the past fifty years the uses of cork have multiplied many times. This peculiar and versatile material is now employed in all of the manufacturing and process industries. It has even invaded the field of decorative art, and it may truly be regarded as a necessary concomitant of civilization.

WHY CORK IS AN INSULATOR

As explained above, Nature provided a covering that would protect the Cork Oak from the attack of tropical heat. This is accomplished by shaping a covering of relatively even thickness containing a multitude of minute air particles each hermetically sealed one from the other. Each particle of entrapped air is so small that it will not permit the setting up of air currents and in this way heat penetration is prevented. Furthermore, due to its granular structure, cork has no capillarity, while practically all other insulating materials are of a fibrous nature and have a high degree of capillarity.

Although primarily designed for use in the Refrigeration and Cold Storage Industries, Mundet "Jointite" Cork Insulation has a wide range of applications, as text on the following pages will make clear.

THE MANUFACTURE OF CORKBOARD

The cork bark used for insulation is first ground up into particles or granules of from ⅜ to ⅝ in. in size. These are filled into moulds and hydraulically pressed to the required density. The moulds are then placed in an oven maintained at a relatively high temperature for a period of time dependent upon the thickness of insulation involved. The cork is kept under compression in the moulds throughout the baking process. The heat liquifies the gum or rosin that is peculiar to this type of bark. This gum thoroughly binds the granules together and hermetically seals one from the other, producing a solid slab of cork board (still 100% pure cork). The rough slab is then subjected to a finishing process which cuts it to accurate size and sands its surfaces, completing the manufacture of commercial corkboard insulation.

ESSENTIALS OF GOOD INSULATION

The essentials of good insulation are low thermal conductivity; fire retardance; permanence; non-absorbence; sanitation; economy. Mundet "Jointite" Corkboard incorporates all these qualities.

STANDARD SIZES

Mundet "Jointite" Corkboard is furnished in the following sizes: ½, ¾, 1, 1½, 2, 3, 4 and 6 in. thick. All sheets are 12 in. wide and 36 in. long.

WEIGHT OF CORKBOARD

Mundet "Jointite" Corkboard weighs approximately .75 lb. per sq. ft. per 1 in. thick (board measure) when shipped in bulk. When packed in cartons it weighs approximately .90 lb. per sq. ft. per 1 in. thick.

TABLE OF THICKNESSES RECOMMENDED TO BE USED FOR COLD STORAGE WORK AS INSULATION FOR VARIOUS TEMPERATURES

Range of temperature	Walls, in.	Ceilings, in.	Floor on ground, in.	Floor above ground, in.	Roofs, in.
Below 0° F.	8	8	7	8	9
0° to 10° F.	7	7	6	7	8
10° to 20° F.	6	6	5	6	7
20° to 35° F.	5	5	4	5	6
35° to 50° F.	4	4	3	4	5
50° to 60° F.	3	3	2	3	4
Above 60° F.	2	2	0	2	2

HEAT TRANSMISSION THROUGH CORKBOARD

Mundet Corkboard meets the U. S. Government Master Specification requirements in every respect. Its heat transmission is guaranteed not to exceed .30 B.t.u. per square foot per inch thickness per degree difference in temperature per hour when tested under Bureau of Standards conditions and methods. In actual cold storage practice the insulation value may be taken as about ten per cent better than the guaranteed figure.

BAKERIES

Gordon Baking Co.
Ward Baking Co.
Kroger Grocery & Baking Co.

CANDY FACTORIES

F. G. Shattuck Co. (Schrafft's), New York, N. Y.
Park & Tilford, New York, N. Y.
Planters Nut & Chocolate Co., Suffolk, Va.

OUR FACILITIES

The name of Mundet was first identified with cork products in the year 1865. Today the Company ranks among the leaders of the industry.

The Company maintains two plants for the exclusive manufacture of insulation products. One is located in Portugal and the other in New Jersey (about ten miles from New York City). These plants are of about the same capacity and can produce a total of 60,000,000 to 70,000,000 ft. board measure of insulation a year. "Jointite" products are stocked in many of the large centers of the world. The Portuguese plant is adjacent to the Port of Lisbon from which regular sailings are to be had to any part of the world. The New Jersey plant at all times carries large stocks of finished products, as do all of the Branch Offices located in the principal cities of the United States and Canada. The Company's shipping facilities are unsurpassed, either by rail or water.

SALES AND SERVICE

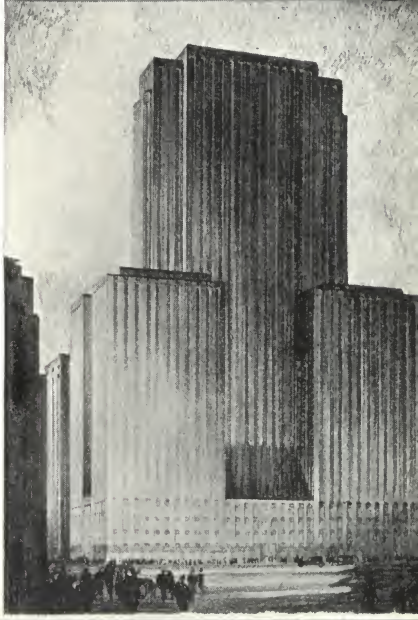
The Company maintains branches in the principal cities of the United States and Canada for the convenience of its clients. Our branch offices are in charge of competent engineers who will gladly co-operate and furnish information pertinent to insulation work.

CONTRACTING

The Company maintains a well organized erecting force at each branch office fully capable of handling any erection contract involving its products. No contract is too small or too large.

GUARANTEE

The Company unqualifiedly guarantees that its material and workmanship are of the best and agrees to make good, without cost to the client, any defect that may be chargeable to inferior material or workmanship.



General Cold Storage Insulation • • •

Walls • • •

Brick, Concrete, Hollow Tile, Wood Frame • Cork Partitions

SPECIFICATIONS

Where First Course Is Erected in Cement Mortar

SPECIFICATION NO. 1 • • • The walls shall be insulated with .... in. of "Jointite" Corkboard, applied in two courses of .... in. each. The first course of corkboard shall be erected against the walls in a ½-in. bed of portland cement mortar.

Note (1): If walls are of concrete, specify that they shall be thoroughly hacked in order to provide a good bond.

The second course of corkboard shall then be applied against the first course in a heavy dip coat of hot asphalt and additionally secured to the first course with hard wood skewers of suitable length. All joints shall be broken relative to adjacent layers and to the preceding course. The exposed cork surfaces shall be finished with a ½-in. plaster finish applied in two coats; the first coat to be a rough or scratch coat and the second coat to be brought to a float (or trowel) finish and marked off in squares of approximately 4 ft. in order to minimize and direct shrinkage cracks.

Note (2): If mastic finish is desired in place of plaster finish, omit the last paragraph above and substitute as follows:

The exposed cork surface shall be finished with a ⅛-in. cold mastic finish consisting of a brush or spray application of Mundet Asphalt Emulsion, followed by a trowel application of Mundet Asphalt Emulsion mixed with asbestos and clean screened sand in the following proportions, viz., 50 gal. emulsion to 100 lb. of asbestos floats to 4 cu. ft. of sand. (This finish is black in color and may be painted if desired.)

Where First Course Is Erected in Hot Asphalt

SPECIFICATION NO. 2 • • • The walls shall first be given a single coat of portland cement plaster left under the float.

Note (1): If walls are of concrete, specify that they shall be thoroughly hacked in order to provide a good bond.

After the plaster coat has set, the walls shall be given two spray, or brush, coats of Mundet Asphalt Primer, following which the walls shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. The first course of corkboard shall be applied against the walls in a dip coat of hot asphalt. The second course and the finish shall be as stipulated in Specification No. 1.

Wood Frame Walls

SPECIFICATION NO. 3 • • • Two courses of waterproof insulation paper shall be securely tacked against the sheathed surfaces, after which the walls shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. The first course of corkboard shall be nailed dry to the wall with the galvanized wire nails made especially for this type of work. The second course of corkboard shall be applied against the first course in a heavy dip coat of hot asphalt, and additionally secured with hard wood skewers of suitable length. All joints shall be broken with respect to adjacent layers and to the preceding course. The finish shall be as provided in Specification No. 1.

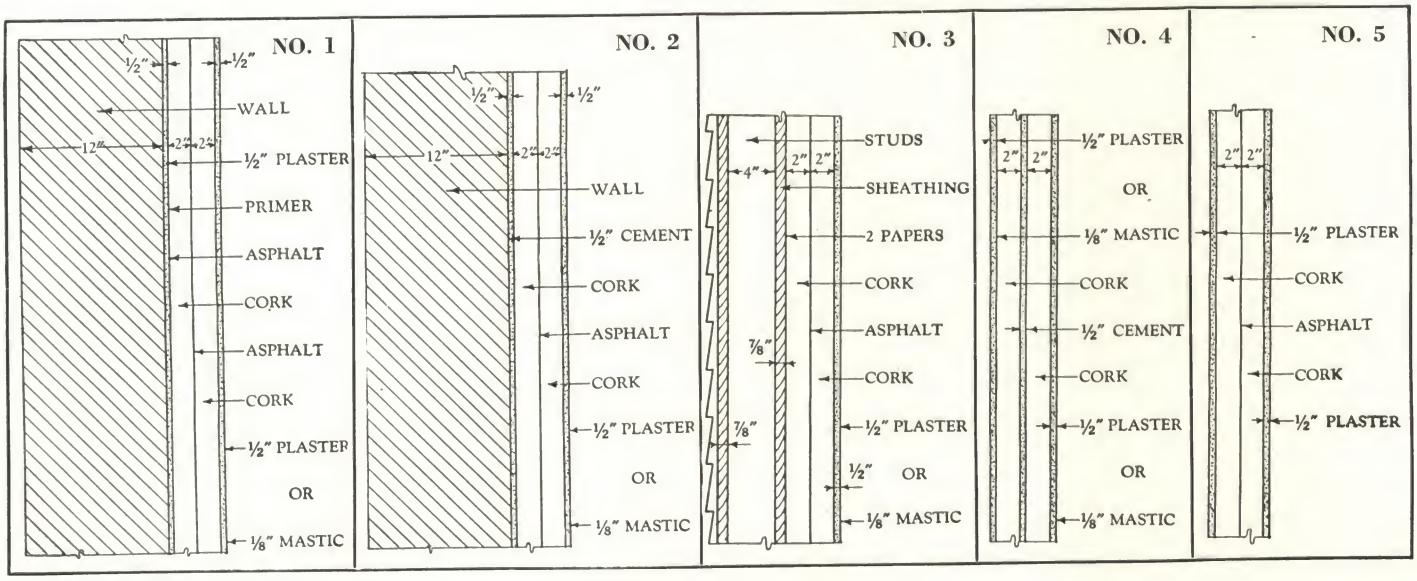
Cork Partitions—Cement Mortar

SPECIFICATION NO. 4 • • • The partitions shall be of the solid cork and cement self-sustaining type, and shall be fabricated of two courses of .... in. "Jointite" Corkboard. The first course of corkboard shall be erected against temporary studding and the second course shall be erected against the first in a ½-in. bed of portland cement mortar, and additionally secured with hardwood skewers of suitable length. All joints shall be broken relative to adjacent layers and to the preceding course. The exposed surfaces shall be finished as provided in Specification No. 1.

Cork Partitions—Hot Asphalt

SPECIFICATION NO. 5 • • • The partitions shall be of the solid cork and cement self-sustaining type, and shall be fabricated of two courses of .... in. "Jointite" Corkboard. The first course of corkboard shall be erected against temporary studding and the second course shall be erected against the first in a dip coat of hot asphalt, and additionally secured with hard wood skewers of suitable length.

All joints shall be broken relative to adjacent layers and to the preceding course. The exposed cork surfaces shall be finished with ½ in. of portland cement plaster mixed 1:2, applied in two coats; the first coat to be a rough or scratch coat and the second coat to be brought to a float (or trowel) finish and marked off in squares of approximately 4 ft. in order to minimize and direct shrinkage cracks.



CLUBS

Chicago Womans Club, Chicago, Ill.
Engineers Club, Boston, Mass.
Union League Club, New York, N. Y.

COLD STORAGE WAREHOUSES

Merchants Refrigerating Co., Jersey City, N. J.
Great Atlantic & Pacific Tea Co., Various Locations
Manhattan Refrigerating Co., New York, N. Y.

• • • *Floors* • • •

SPECIFICATIONS

Concrete Floors, Concrete Base
SPECIFICATION NO. 6

The floor shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. The first course shall be laid down in a heavy mop coat of hot asphalt and the second course shall be laid upon the first in like manner, with all joints broken relative to the first course. The exposed top of the corkboard shall then receive a heavy mop coat of hot asphalt which shall thoroughly seal all joints.

A concrete wearing floor .... in. thick shall be laid upon the corkboard. The first .... in. shall be gravel or rock concrete mixed ..:..:.. followed by a 1-in. cement top mixed 1:2 and floated and troweled to a smooth and even finish. The floor shall be pitched to floor drains.

Wood Floors, Concrete Base
SPECIFICATION NO. 7

The floors shall be insulated with .... in. of "Jointite" Corkboard in two layers as provided in Specification No. 6.

Over the first course of corkboard there shall be laid ....x4-in. wood sleepers on 28-in. centers, all securely mopped in.

The exposed cork surface shall then receive a heavy mop coat of hot asphalt which shall thoroughly seal all joints.

A wearing floor of 2x.... in. long leaf yellow pine shall then be applied, securely nailed to the sleepers provided in the top layer of corkboard.

Mastic Floors, Concrete Base
SPECIFICATION NO. 8

The floor insulation shall be laid as in Specification No. 6.

The finish floor shall consist of a 2-in. mastic wearing surface applied in two courses.

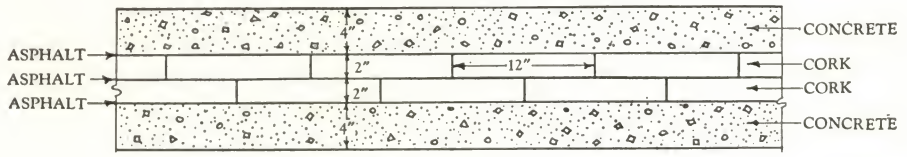
Concrete Floors, Wood Base
SPECIFICATION NO. 9

The floor shall be insulated as in Specification No. 6.

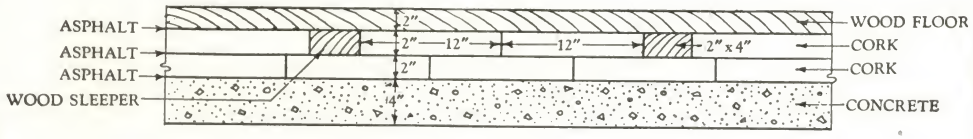
Wood Floors, Wood Base
SPECIFICATION NO. 10

The floors shall be insulated as in Specification No. 7.

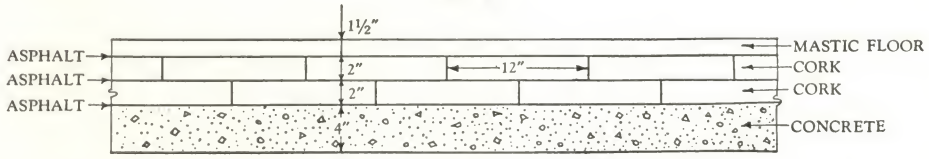
No. 6



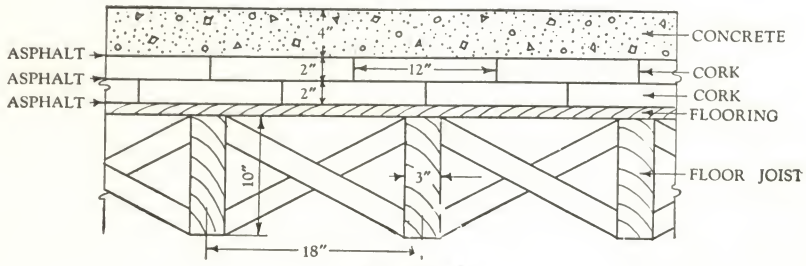
No. 7



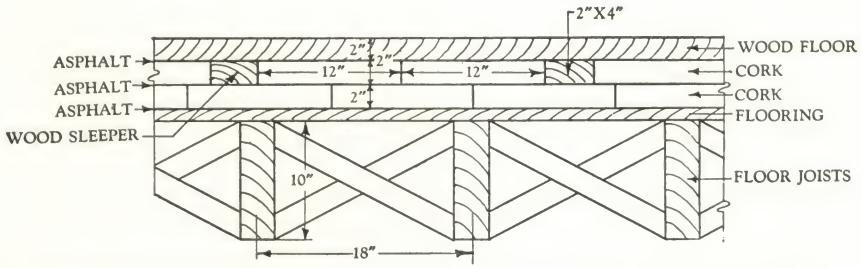
No. 8



No. 9



No. 10



COLLEGES

Yale University, New Haven, Conn.
Harvard University, Boston, Mass.
University of Pennsylvania, Philadelphia, Pa.

DAIRIES

Borden Farms Products Co., Various Locations
Sheffield Farms Co., Various Locations
Beatrice Creameries, Detroit, Mich.

Users of Mundet

• • Ceilings • •

SPECIFICATIONS

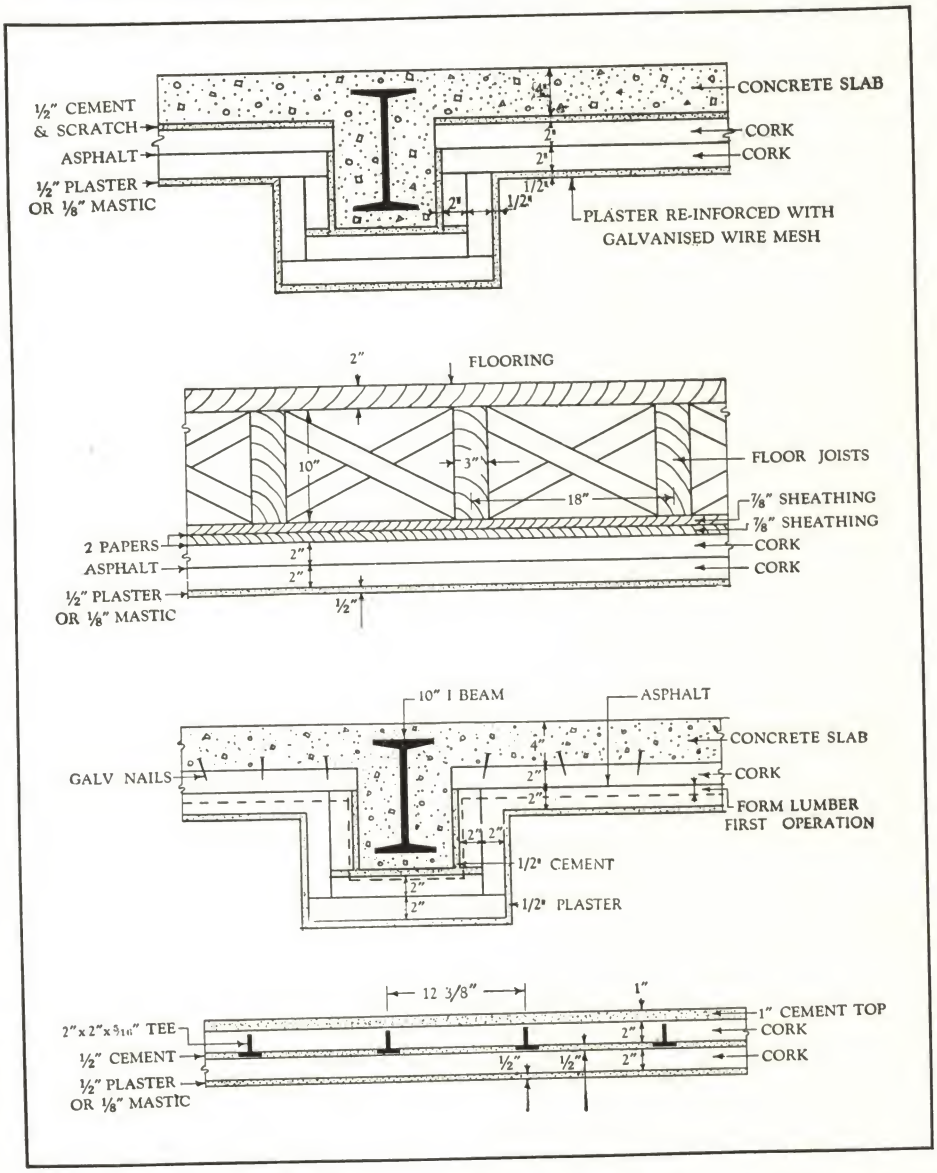
Concrete • SPECIFICATION NO. 11 • • •

The ceiling shall be insulated with ... in. of "Jointite" Corkboard applied in two courses. The ceiling areas shall first be thoroughly hacked and pitted and shall then receive a tight scratch coat of portland cement mortar.

The first course of corkboard shall then be applied in a ½-in. bed of portland cement mortar and securely propped in place until the cement has set. The second course of corkboard shall then be applied against the first course in a heavy dip coat of hot asphalt, and additionally secured with hardwood skewers of suitable length. All joints shall be broken relative to adjacent layers and to the preceding course.

The exposed cork surfaces shall be finished as provided in specification No. 1.

Note: If plaster finish is desired it is recommended that No. 19-gauge galvanized wire mesh having two meshes to the inch be securely stapled to the cork surfaces before plaster finish is applied.



Alternate

The ceiling shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. The ceiling areas shall be stripped with 2"x4" treated lumber spaced 12" or 18" or 24" apart and fastened to ceiling with galvanized expansion bolts not more than 5'-0" on centers. The entire ceiling area shall then be given a spray coat of Mundet Asphalt Primer, following which the first course of corkboard shall be applied in a heavy dip coat of hot asphalt and securely toe nailed to 2"4" strips. Second course application same as specified in base specifications.

Ceilings, Wood

SPECIFICATION NO. 12 • •

The ceiling shall be insulated with .... in. of "Jointite" Corkboard in two courses over wood sheathing.

Two layers of ⅞-in. tongued and grooved sheathing shall be installed on the underside of ceiling joists with two layers of waterproof insulation paper between the sheathing courses, and two layers of waterproof insulation paper securely tacked to the underside of the sheathing. On the ceiling surface thus prepared shall be erected the first layer of corkboard, nailing each piece securely in place. The second course of corkboard shall then be applied against first course in a dip coat of hot asphalt and finished as provided in Specification No. 1.

Ceilings (New Buildings) Concrete

SPECIFICATION NO. 13 • •

The ceilings shall be insulated with ... in. of "Jointite" Corkboard applied in two courses. The general contractor will lower the forms of the slab construction a distance sufficient to allow the first course of corkboard to be laid dry in the forms. There shall be at least six special galvanized nails placed in each sheet of corkboard laid in forms with the heads protruding not less than 1½ in., to act as a key in the concrete. After the forms are stripped the second course of corkboard and both courses of corkboard on the beams and girders shall be applied and finished as in Specification No. 11.

Ceilings, False T Iron SPECIFICATION NO. 14

The ceilings shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. A framework consisting of 2x2x.. in. tee irons spaced on 12½-in. centers, shall be erected upon 2x2-in. wood framing concealed in the cork wall insulation. The first course of corkboard shall be placed between the tee irons after all edges have been dipped in hot asphalt. The second course of corkboard shall be applied against the underside of the first course in a ½-in. bed of portland cement mortar, and additionally secured with hardwood skewers of suitable length. All joints in the second course shall be broken relative to adjacent layers and to the first course. The top exposed surface of the corkboard shall be finished with 1 in. of portland cement plaster left under the float. The underside of the insulation shall be finished as provided in Specification No. 1.

FISH STORAGE WAREHOUSES

N. J. Ice & Cold Storage Co., Beach Haven Crest, N. J.
Bay State Fishing Co., Boston, Mass.
General Seafoods Co., Various Locations

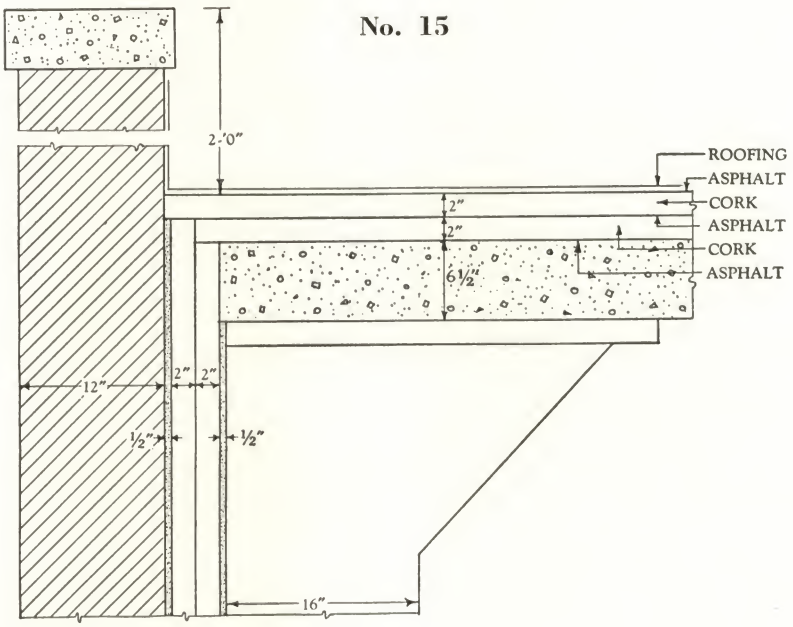
FUR STORAGES

Revillon Freres, New York, N. Y.
L. Bamberger & Co., Newark, N. J.

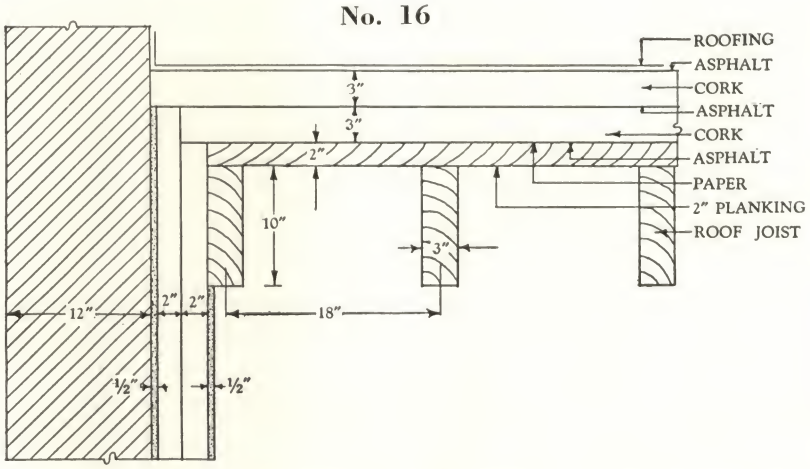
• • Roofs • •

SPECIFICATIONS

No. 15



No. 16



Concrete • SPECIFICATION NO. 15 •

The roof slab shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. The first course of corkboard shall be laid down on the concrete slab in a heavy mop coat of hot asphalt, and against it a second course of corkboard shall be applied in like manner. All joints shall be broken relative to adjacent layers and to the preceding course. The exposed cork surfaces are to remain uncoated and left ready for the roofing contractor to lay his roofing. The cork contractor and the roofing contractor shall co-operate with each other in order that all insulation laid in any one day will be protected with at least two-ply roofing.

Wood • SPECIFICATION NO. 16 •

The roof shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. Over the roof planking shall be laid one course of waterproof insulation paper with the seams lapped at least 3 in. and mopped in with hot asphalt. The cork insulation shall then be applied as in Specification No. 15.

•

HOSPITALS

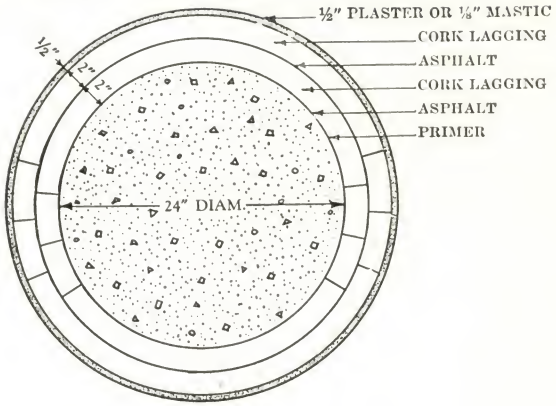
Physicians and Surgeons Hospital, Wilmington, Del.
Columbus Hospital, Chicago, Ill.
U. S. Government Hospitals, Various Locations
Presbyterian Hospital, Newark, N. J.
New York State Hospitals, Various Locations
New York City Hospitals, New York, N. Y.

Users of Mundet

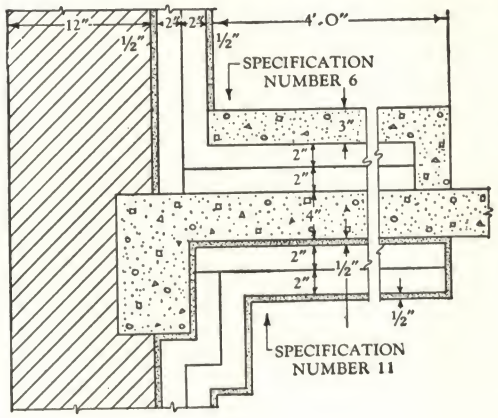
Column Insulation

SPECIFICATION NO. 17 • • •

The circular columns shall be insulated with ..... in. of "Jointite" Corkboard bevelled lagging, applied in two courses. The column surfaces shall receive a single coat of Mundet Primer, after which the first course of lagging shall be applied in a dip coat of hot asphalt. Each lag shall be securely locked to the adjacent lags with hard wood skewers of suitable length. The second course of lagging shall then be applied against the first course in a heavy dip coat of hot asphalt, and additionally secured to the first course with hard wood skewers of suitable length. The exposed cork surfaces shall be finished as in Specification No. 1.

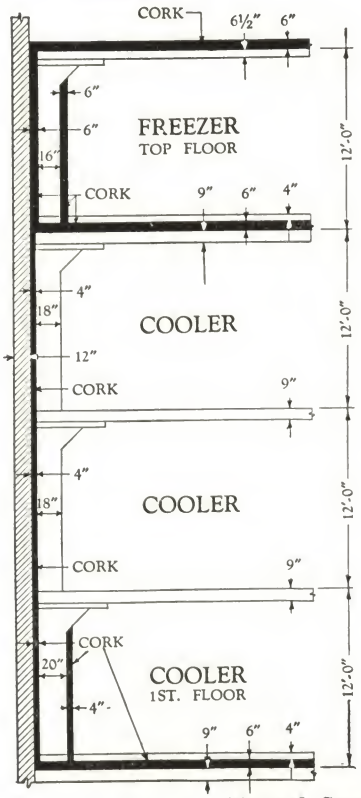


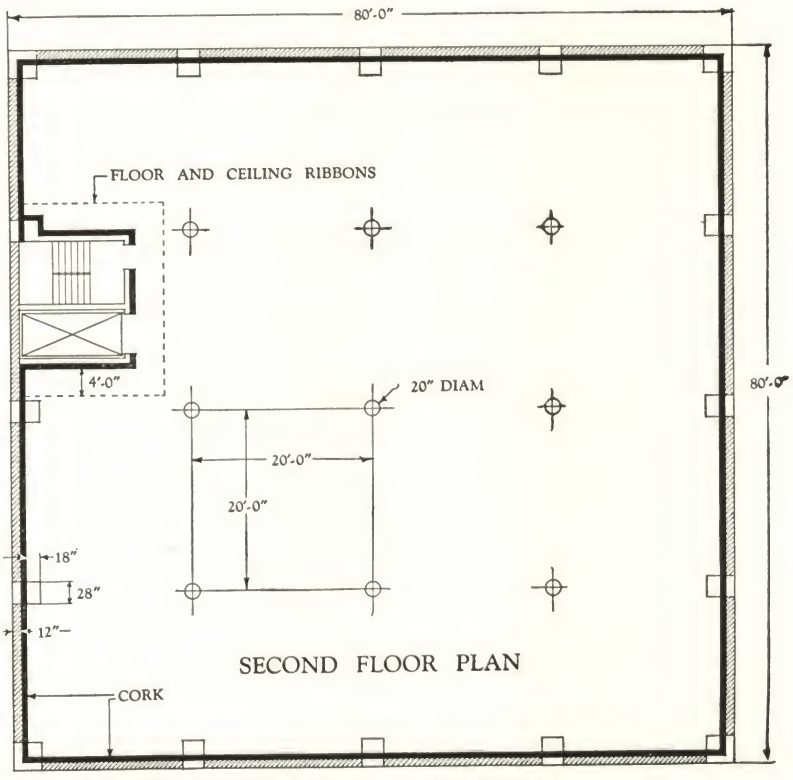
LAP OR RIBBON INSULATION



Used where continuous insulation is not obtainable.

Ribbon insulation is the form shown on the accompanying sketch. It consists of insulation either on floor or ceiling which extends out to a limited distance only from the wall line. It is used where conditions make it impossible to provide continuous insulation. The ribbon insulation must be carried around beams and girders. For specifications, see notes on cut.





Typical Section and Plan of Building Showing Continuous Installation

HOTELS

Hotel Park Central, New York, N. Y.
Hotel St. George, Brooklyn, N. Y.
Hotel Majestic, Philadelphia, Pa.
Bryn Mawr Beach Hotel, Chicago, Ill.
Kenmore Hotel, Boston, Mass.
Jung Hotel, New Orleans, La.

Coil Bunker Construction

SPECIFICATION NO. 18 • • •

A coil loft or bunker shall be constructed, supported on ...x... in. timbers spaced 20 in. apart (Item 1), which shall be suitably supported in walls.

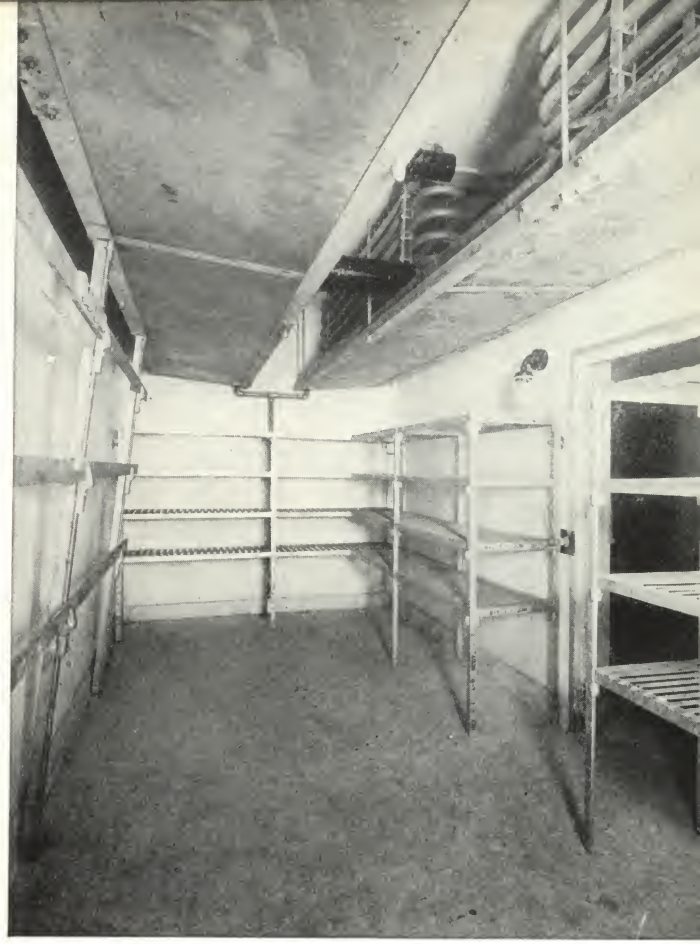
Wood cleats 2x4 in. (Item 2), shall then be securely bolted to the sides of the timbers and will act as supports for the warm air baffles (Item 4).

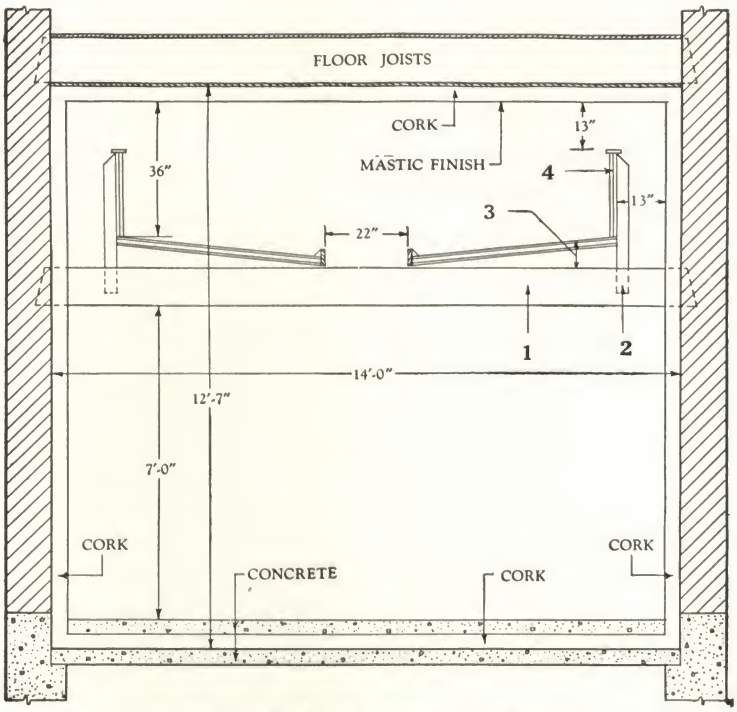
The top of the timbers shall then be given the correct slope by nailing tapered strips, which shall be the width of the timber and shall vary from 3 in. high at the outside end to 1 in. at the inside. These tapered strips shall then be sheathed with 7/8-in. tongued and grooved sheathing of spruce or cypress, over which shall be laid two courses of waterproof insulation paper, followed by a single course of 2-in. corkboard, laid down in and coated with hot asphalt.

In the corkboard shall be buried 2x2-in. wood sleepers on 26-in. centers, which will act as nailing strips for the 7/8-in. tongued and grooved sheathing which shall be placed over the corkboard together with two layers of waterproof insulation paper, all securely nailed to the sleepers (Item 3). The top surface of bunker floor shall then be covered with No. 24-gauge galvanized iron (or copper) lining flashed up on the warm air baffles a distance of 12 in., and provided at the low point with a scupper for drainage connection. The baffles shall be constructed of two courses of 7/8-in. tongued and grooved sheathing with two layers of waterproof insulation paper between them, all securely nailed to the wooden cleats mentioned above (Item 4).

The edges of the cold air duct shall be formed with 2x8-in. timbers securely fastened to the bunker timbers. The metal lining of the bunker shall extend over these timbers and shall be lapped vertically downward at least 2 in.

Note: For rooms having less than 8 ft. inside clear width, it is customary to use a single bunker pan. In rooms of greater than 8-ft. width the double bunker pan illustrated should be used. It is customary to make the total duct widths equal to about 30% of total width of room.





Section Showing Coil Bunker Construction

ICE CREAM PLANTS

Breyers Ice Cream Co., Various Locations
F. G. Shattuck Co. (Schrafft's), New York, N. Y.
Eskimo Pie Corp., Brooklyn, N. Y.
Anheuser-Busch Co., Various Locations
Wieland Ice Cream Co., Chicago, Ill.
Good Humor Ice Cream Co., Detroit, Mich.

Users of Mundet

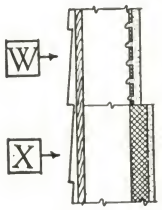
Typical Construction Details

Below are illustrated certain commonly used building sections, with and without insulation, together with tables showing the heat transmission through them expressed in B.t.u. per hour, per square foot, per degree difference in temperature. The figures given for uninsulated construction have been taken from information contained in the 1930 Guide of the American Society of Heating and Ventilating Engineers. Savings in heat loss by the use of Mundet "Jointite" Corkboard are apparent.

The cuts are representative of methods of construction in common use and the data given will apply regardless of size or class of work. Should there be a type not illustrated upon which information is desired, a communication addressed to any of our offices will receive immediate attention and the specific information will be furnished.

On thickness of cork insulation greater than 3 in., figures are based on two-layer construction, using hot asphalt between the layers of cork.

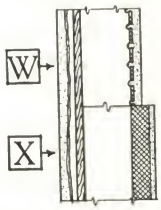
SPECIFICATIONS



"W" beveled siding, waterproof paper, sheathing, studding, lath and plaster.

"X" beveled siding, waterproof paper, sheathing, studding, corkboard, plaster.

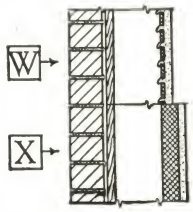
Not insulated, W	X, insulated with corkboard, in.				
	1½	2	3	4	6
.275	.117	.098	.073	.058	.040



"W" stucco on metal lath, furring, waterproof paper, sheathing, studding, lath and plaster.

"X" stucco on metal lath, furring, waterproof paper, sheathing, studding, corkboard, plaster.

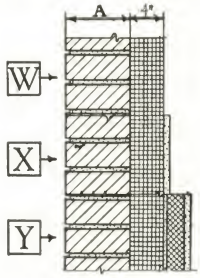
Not insulated, W	X, insulated with corkboard, in.				
	1½	2	3	4	6
.319	.125	.102	.076	.059	.041



"W" brick veneer, waterproof paper, sheathing, studding, lath and plaster.

"X" brick veneer, waterproof insulation paper, sheathing, studding, corkboard, plaster.

Not insulated, W	X, insulated with corkboard, in.				
	1½	2	3	4	6
.258	.114	.095	.072	.057	.040

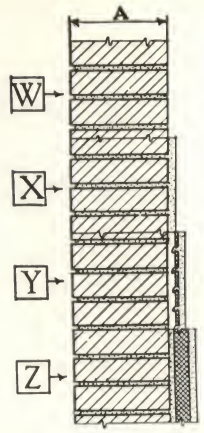


"W" brick, tile.

"X" brick, tile, plaster.

"Y" brick, tile, portland cement backing, corkboard, plaster.

Thickness, A, in.	Not insulated		Y, insulated with corkboard, in.				
	W	X	1½	2	3	4	6
8	.257	.243	.110	.093	.071	.054	.039
12	.205	.197	.101	.086	.067	.052	.039
16	.196	.185	.098	.084	.066	.051	.038



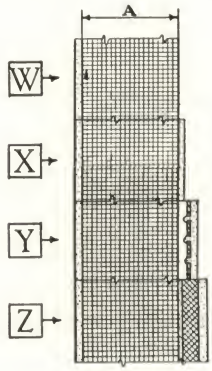
"W" 4-in. face brick and common brick.

"X" brick, plaster.

"Y" brick, furring, lath and plaster.

"Z" brick, portland cement mortar backing, corkboard, plaster.

Thickness A, in.	Not insulated			Z, insulated with corkboard, in.				
	W	X	Y	1½	2	3	4	6
8	.385	.356	.261	.127	.106	.078	.059	.042
12	.295	.277	.216	.115	.098	.074	.056	.040
16	.238	.227	.184	.104	.090	.069	.053	.039
20	.190	.176	.153	.097	.081	.064	.050	.037
24	.162	.148	.126	.089	.074	.059	.047	.035



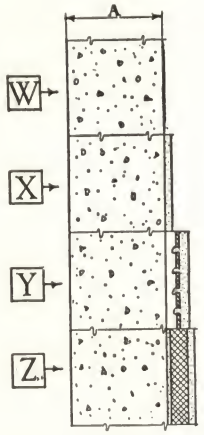
"W" stucco, hollow tile.

"X" stucco, hollow tile, plaster.

"Y" stucco, hollow tile, furring, lath and plaster.

"Z" stucco, hollow tile, portland cement backing, corkboard, plaster.

Thickness A, in.	Not insulated			Z, insulated with corkboard, in.				
	W	X	Y	1½	2	3	4	6
4	.515	.463	.411	.142	.113	.082	.061	.043
6	.419	.384	.346	.134	.107	.080	.059	.042
8	.317	.296	.228	.119	.099	.074	.057	.041
10	.304	.285	.221	.117	.093	.073	.058	.040
12	.241	.229	.186	.106	.090	.069	.053	.039



"W" concrete—1:3:5 mix.

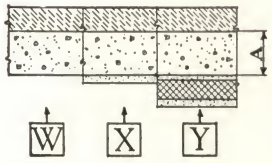
"X" concrete, plaster.

"Y" concrete, furring, lath and plaster.

"Z" concrete, portland cement mortar backing, corkboard, plaster.

Thickness A, in.	Not insulated			Z, insulated with corkboard, in.				
	W	X	Y	1½	2	3	4	6
4	.641	.573	.367	.150	.120	.085	.062	.044
6	.583	.518	.339	.142	.116	.084	.062	.043
8	.512	.461	.314	.138	.113	.082	.061	.043
10	.455	.416	.292	.134	.110	.081	.060	.042
12	.411	.378	.273	.131	.106	.079	.059	.042
16	.343	.320	.241	.122	.102	.076	.057	.041
18	.319	.299	.228	.120	.099	.075	.057	.041
20	.294	.277	.216	.116	.097	.073	.056	.040

SPECIFICATIONS

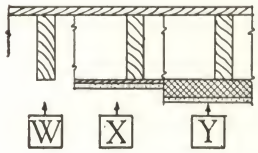


"W" finished (2-in.) concrete floor, reinforced concrete slab.

"X" finished floor, reinforced concrete slab, plaster finish.

"Y" finished concrete floor, reinforced concrete slab, portland cement mortar backing, corkboard, plaster.

Thickness A, in.	Not insulated		Y, insulated with corkboard, in.				
	W	X	1½	2	3	4	6
4	.461	.419	.135	.110	.081	.060	.042
5	.438	.400	.133	.109	.081	.060	.042
6	.417	.380	.131	.107	.080	.059	.042
7	.392	.363	.129	.106	.079	.059	.042
8	.378	.348	.127	.105	.079	.059	.042
10	.345	.322	.123	.103	.077	.058	.041



"W" single wood floor joists.

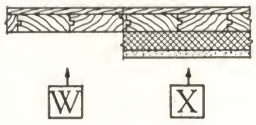
"X" single wood floor joists, lath and plaster.

"Y" single wood floor, corkboard, plaster.

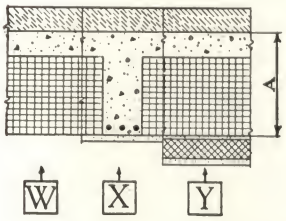
Not insulated		Y, insulated with corkboard, in.				
W	X	1½	2	3	4	6
.440	.272	.119	.100	.075	.057	.041

"W" finished wood floor (1 in.), mill constructed plank floor.

"X" finished wood floor, mill constructed plank floor, corkboard, plaster.



Not insulated W	X, insulated with corkboard, in.				
	1½	2	3	4	6
.233	.108	.092	.070	.053	.039



"W" finished (2-in.) concrete floor, reinforced concrete joist and tile slab.

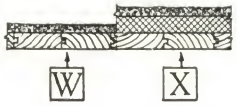
"X" finished floor, reinforced concrete joist and tile slab, plaster.

"Y" finished floor, reinforced concrete joist and tile slab, portland cement mortar backing, corkboard, plaster.

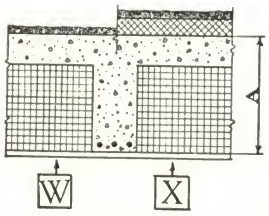
Thickness A, in.	Not insulated		Y, insulated with corkboard, in.				
	W	X	1½	2	3	4	6
5½	.621	.550	.150	.119	.085	.062	.043
8	.430	.359	.135	.111	.084	.062	.043
10½	.392	.321	.132	.106	.081	.060	.042
13	.370	.299	.129	.104	.079	.059	.042
15½	.271	.200	.114	.096	.074	.057	.041

"W" standard built-up roofing, mill construction plank roof.

"X" standard built-up roofing, corkboard, mill construction plank roof.



Not insulated W	X, insulated with corkboard, in.				
	1½	2	3	4	6
.345	.126	.104	.077	.058	.041



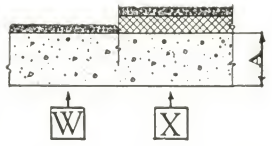
"W" standard built-up roofing, reinforced concrete joists and tile slab, plaster.

"X" standard built-up roofing, corkboard, reinforced concrete joists and tile slab, plaster.

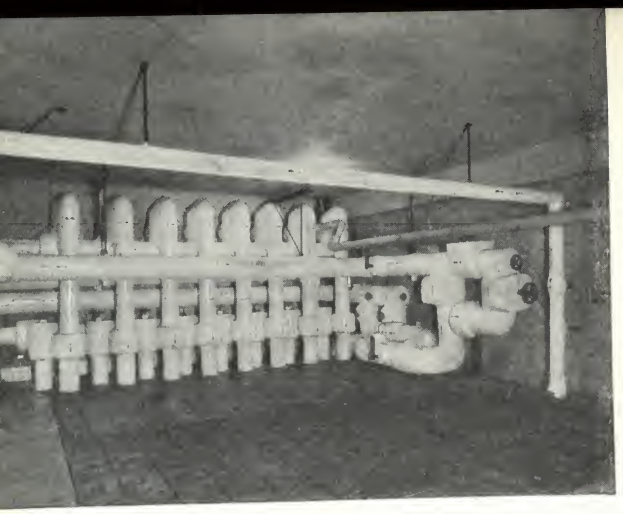
Thickness A, in.	Not insulated W	X, insulated with corkboard, in.				
		1½	2	3	4	6
5½	.515	.143	.116	.084	.062	.043
8	.456	.138	.113	.082	.061	.043
10½	.410	.133	.110	.081	.060	.042
13	.381	.130	.107	.080	.059	.042

"W" standard built-up roofing, reinforced concrete slab.

"X" standard built-up roofing, corkboard, reinforced concrete slab.



Thickness A, in.	Not insulated, W	X, insulated with corkboard, in.				
		1½	2	3	4	6
2	.658	.153	.122	.087	.063	.044
3	.610	.151	.120	.086	.063	.044
4	.568	.148	.119	.085	.062	.044
5	.532	.145	.117	.084	.062	.043
6	.500	.143	.115	.083	.061	.043
7	.472	.140	.113	.082	.061	.043
8	.447	.138	.112	.082	.060	.043



"Jointite" Moulded Cork Pipe Covering

All the insulating qualities of cork hereinbefore explained for cold storage, and its resistance to heat transmission generally, apply equally to its value as insulation for cold piping. It affords a most efficient and permanent means for protecting cold water, brine, and ammonia pipe lines and fittings.

"Jointite" Moulded Cork Pipe Covering is made of pure granulated cork compressed and moulded in forms and baked as described for corkboard. Following the baking process each piece of pipe covering is covered all over with a mineral rubber finish which prevents damage from moisture or frost.

Various moulded shapes are made both for pipe and fittings so that all parts of the pipe lines may be neatly and adequately covered.

Thickness		Clear space between pipes, in.	Clear space between pipes and walls, etc., in.
Brine	Screwed fittings under 6 in.	8	6
	Screwed fittings over 6 in. and flanged fittings	14	8
Special thick	Screwed fittings under 6 in.	10	8
	Screwed fittings over 6 in. and flanged fittings	18	12
Ice water thick	Screwed fittings under 6 in.	6	4
	Screwed fittings over 6 in. and flanged fittings	10	5

SPECIFICATIONS

Used for 75% of all Pipe Covering

SPECIFICATION A • ○ ○ Pipe—After the pipe lines have been tested and approved, they shall be insulated with "Jointite" [(1), (2) or (3)] Cork Pipe Covering. All contact joints shall be sealed with Mundet Waterproof Cement. All contact joints shall be butted closely and firmly together and secured with copper clad steel wire, spaced at intervals of not more than 6 in. All seams shall be horizontal. All mated sections shall be used together. The so-called "broken joint" method must not be used.

Fittings—The fittings shall be insulated with "Jointite" Moulded Cork Fitting Covers of a thickness to match the above pipe covering. All contact joints shall be sealed with Mundet Waterproof Cement. All joints shall be butted closely and firmly together and secured with not less than four copper clad steel wires. On all flanged fittings and on all screwed fittings larger than 6 in., not less than six wires shall be used.

Voids—All spaces between fittings and fitting covers shall be filled with Mundet Fitting Filler.

Seams—All seams and chipped edges in the fitting covers and pipe covering shall be filled with Mundet Seam Filler and the surface made smooth.

Finish—The entire outer surface of the insulation shall receive one coat of Mundet Finish Paint.

Hangers—Pipe Lines shall be supported, in every case, outside of the covering and shall be protected by carefully fitted metal shields extending 4 in. on each side of the hanger. The shield shall embrace the entire lower semicircle.

Spacing—Minimum spacing between pipes and adjacent surfaces shall be as given in the table at the top of this column.

Moist Air Conditions or Outdoor Use

SPECIFICATION B • • • Pipe, Fittings, Voids, Seams—*Note:* Specifications under these headings same as Specification A.

Roofing—After the seams have been filled, there shall be applied ... layers of ... ply smooth surfaced roofing. Each joint shall be lapped not less than 2 in. The laps shall be sealed with asphalt paint and secured with staples or copper clad steel wire. All laps shall be laid in such a manner as to form a watershed.

Finish, Hangers, Spacing—*Note:* Specifications under these headings same as Specification A.

Decorative Canvas or Paint Finish

SPECIFICATION C • • • Pipe, Fittings, Voids, Seams—*Note:* Specifications under these headings same as Specification A.

Canvas—After the seams have been filled, the pipe covering shall be wrapped with No. 8 Rosin Sized Paper, and the fittings shall be given a coat of asbestos cement, troweled on, and of sufficient thickness to give a smooth base for canvas. Over the pipe and fittings, a jacket of 8-oz. canvas shall be neatly sewn, using not less than three stitches to the inch. All seams shall be located along the line of minimum visibility.

Finish—The canvas jacket shall be sized and painted with two coats of lead and oil paint.

Hangers, Spacing—Specification under this heading, same as Specification A.

Low Temperature Piping

SPECIFICATION D • • • Pipe, Fittings, Voids, Seams—Specifications under these headings same as Specification A.

Membrane Jacket—Over the fittings there shall be applied a layer of mineral rubber cloth, lapped not less than 2 in. and sealed with asphalt paint. Starting with a 2-in. lap upon the fittings, the straight pipe shall be wrapped spirally with a layer of rubberized adhesive membrane tape lapped not less than 1 in.

Finish—Finish to be either as in Specification A or Specification C.

Hangers, Spacing—Specifications under this heading same as Specification A.

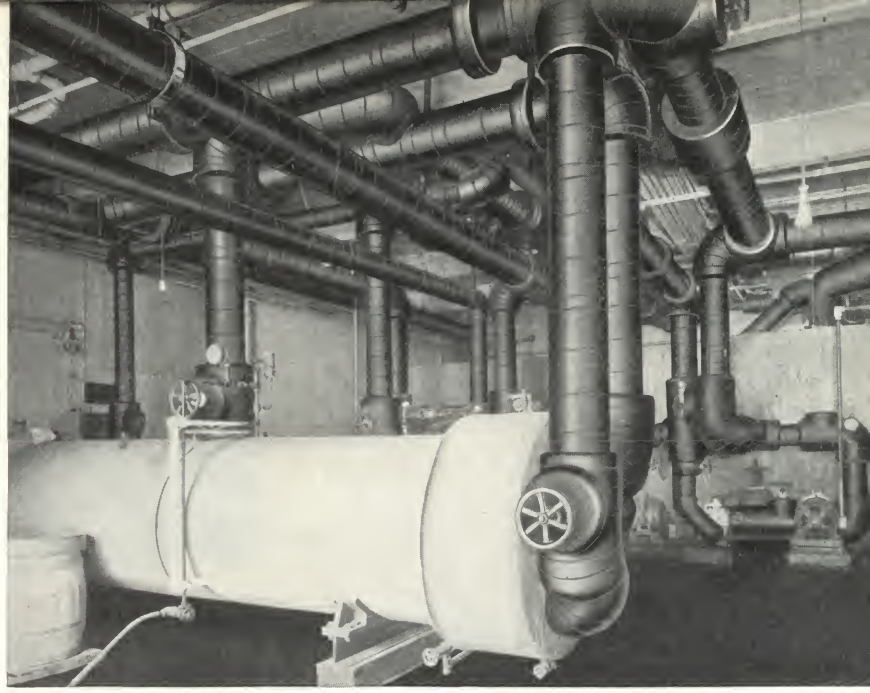
ICE PLANTS

Knickerbocker Ice Co., New York, N. Y.
Boston Ice Co., Boston, Mass.
City Ice & Fuel Co., St. Louis, Mo.

OFFICE BUILDINGS

New York Life Building, New York, N. Y.
Provident Mutual Life Ins. Building, Philadelphia, Pa.
Russ Building, San Francisco, Cal.

"Jointite" Cork Lagging



We manufacture beveled cork lagging and discs for the insulation of cylindrical tanks and coolers. The lagging is cut to order to any desired radius. If desired, the lagging can be furnished with a ⅛-in. mastic coating, ironed in at the factory. Shipment can be made within 24 hours after the order is received by our factory.

SUGGESTED THICKNESS

Note: The numbered items shown below are for covering of various standard thicknesses and for purposes as indicated. Reference will be made to this list in specification text.

2 in. of lagging (1) Above 40° F.
3 in. of lagging (2) Above 25° F. and below 40° F.
(3) Above 10° F. and below 25° F. — 4 in. of lagging } Applied in
(4) Below 10° F. — 6 in. of lagging } two courses

SPECIFICATIONS

SPECIFICATION E • • •

Note: This specification is usually used in conjunction with Specification A.

Lagging—*(1) Tank Surfaces*—After the cooler or tank has been tested and approved, the body of the tank shall be insulated with [see items (1), (2), (3) and (4)] ..... in. of "Jointite" Beveled Cork Lagging, applied in ..... courses. The first course shall be applied against the tank (with or without mineral rubber finish on the inside), with all contact joints firmly and securely butted together and sealed with Mundet Waterproof Cement. The lagging shall be further secured with copperclad steel wire spaced at intervals of not more than 6 in. (On tanks larger than 20″ in diameter —outside measurement of cork—the lagging may be secured with No. 20-gauge galvanized spring steel bands ¾″ wide applied with special flush type clips on 9″ centers). The second course of lagging shall then be applied against the first course in the same manner as above with all joints in the lagging broken with respect to the first.

(2) Flanges—The flanges shall be insulated in the same manner as the tank surfaces. The flange lagging shall lap upon the body lagging for 12 in. and shall project beyond the outermost portion of the head, a distance equal to the thickness of the tank insulation.

Discs—The heads shall be insulated with "Jointite" Corkboard Discs of the same total thickness as the tank insulation (with or without mineral rubber finish on the inside ironed on at the factory). The discs shall be applied directly against the head of the tank and supported by the flange lagging.

Voids—Any spaces between the lagging and the tank body shall be filled with Mundet Fitting Filler. The spaces between the bolts and flanges shall be filled with Mundet Fitting Filler. The spaces between the heads and the flanges shall be filled with fine regranulated cork.

Finish—The entire outer surface of the insulation shall have a mineral rubber finish ironed on at the factory. After the insulation is completed all seams and chipped edges shall be filled with Mundet Seam Filler.

Painting—The entire outer surface shall receive one coat of Mundet Finish Paint.

SPECIFICATION F • • •

Note: This specification is often used in conjunction with Specification C.

Lagging, Discs, Voids, Finish—*Note:* Specifications under these headings same as Specification E.

Canvas—After the seams have been filled, the outer surface of the tank shall be covered with a layer of No. 8 Rosin Sized Paper. Over the paper shall be sewn a jacket of 8-oz. canvas. All seams shall be of the invisible type and shall have not less than three stitches to the inch.

Painting—The canvas shall be sized and painted with two coats of lead and oil paint.

SPECIFICATION G • • •

Note: This specification is very commonly used where a neat appearance, plus the ability to withstand a certain amount of rough usage is desired.

Lagging, Discs, Voids, Finish—Specifications under these headings same as Specification E.

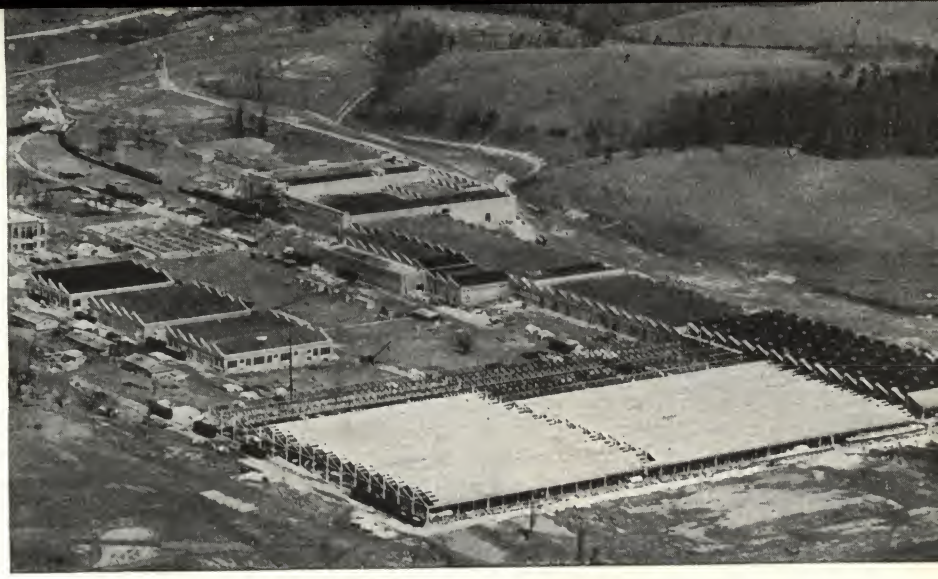
Plaster—After the seams have been filled, the outer surface of the insulation shall be covered with a layer of 1-in. hexagonal mesh galvanized wire, securely stapled to the insulation. Over the wire shall be applied two coats of portland and asbestos cement plaster. The first coat shall be a rough or scratch coat; the second coat shall be troweled to a smooth and even finish.

Painting—Optional.

INDUSTRIAL PLANTS

Public Service Gas & Electric Co., Jersey City, N. J.
Procter & Gamble Co.
DuPont Viscoid Co., Arlington, N. J.
Bethlehem Steel Co., Bethlehem, Pa.
Buick Motor Co., Flint, Mich.
American Enka Corp., Asheville, N. C.

Roof Insulation



To Prevent Condensation •

It is generally recognized today that correct building design must include insulation. The heat transmitted from uninsulated roofs in the winter results in a needless loss, the cost of which comes to a staggering total. Furthermore, the annoying and frequently expensive problem of ceiling condensation may be easily overcome.

In the summer, these same roofs absorb a tremendous amount of heat and deliver it to the rooms below, thus causing discomfort to, and impairing the efficiency of, people who are working in these areas. In certain commercial plants where the humidity and often the temperature must be governed at a high point, due to the processes of manufacture, an uninsulated roof will inevitably chill the air in its vicinity during the winter months to the point where some of its moisture condenses and forms what is commonly known as ceiling "sweat." The moisture drops to the floor, producing a most annoying condition to people who are working in the room and often causing damage to property, since it will drop upon any materials and machinery that may be underneath. The loss due to condensation must be considered separately from the direct loss due to heat leakage through the roof, the latter being present in all uninsulated construction while the former appears only when the humidity is relatively high or when the difference in temperature between the inside of the roof and the room is of considerable magnitude.

Numerous industries are in the position of, for example, textile mills, which have, as one of the prerequisites for proper manufacturing, a high degree of relative humidity. Many textile mills are located in New England, and in winter are operating with a great variation between the inside and outside temperatures of their buildings. Unless these buildings are insulated, the walls and roofs become very much colder, on the inside, than the surrounding air. This cold is transmitted to the adjacent air, which reaches the point of total saturation (dewpoint), and deposits its moisture upon the cold surfaces, from which come the drip. The resultant losses may be grouped as follows:

(1) Direct losses.
  (a) Heat transmitted through roof and walls.
  (b) Damage to goods in process of manufacture.
  (c) Decreased efficiency of labor.
(2) Indirect losses.
  (a) Damage to machinery.
  (b) Deterioration of buildings, particularly of wooden construction.
  (c) Lowered morale of labor due to unpleasant working conditions.

Unfortunately, it is only recently that industry has begun to subject its inherited losses to a careful scrutiny. In the past, ceiling condensation was regarded as a necessary evil, and an inevitable concomitant of high relative humidity. Advanced engineering practice in new buildings, however, has demonstrated its worth to the point where manufacturers have begun to realize that their old equipment cannot compete with new equipment unless it is brought up to date. However, the tendency to maintain a given status quo, plus the inhibition against spending money upon old equipment, has produced a considerable inertia. It is for this reason that all roofs are not insulated, although there have been instances without number where cork insulation has been installed in an existing plant and has paid for itself within a few years in the single item of coal required for heating.

When bringing to the attention of manufacturers the need for cork insulation in buildings, the greater stress has been laid upon the resultant saving in fuel. Today, however, industrial executives in ever increasing numbers are realizing that a most important factor in their problem of keeping costs at a minimum is the attitude of their labor. A worker is never efficient when he is uncomfortable, and therefore the use of insulation, while it may be considered as an intangible benefit from this angle, is nevertheless of vital import.

The other factors that go to make up the losses in uninsulated construction depend entirely upon individual conditions, and it is difficult to evaluate them in general terms, but it is reasonable to conclude that they are present in all cases to a greater or less degree and must eventually appear in the costs of manufacture.

Mention was made, in the foregoing text, of the losses caused by condensation in the textile industry; but it must not be assumed that this industry stands alone. Below are listed a number of types of buildings that are prone to condensation troubles.

Bakeries
Creameries
Laundries
Lumber drying rooms and kilns
Packing houses
Killing rooms
Paper mills
Power houses
Swimming pools
Textile mills—cotton, wool and silk
Tobacco factories
Turkish baths
Twine mills

Thickness of Corkboard Needed

It has already been shown that cork is the ideal insulation for this work. The next important thing to determine is the thickness of corkboard that must be used.

There is no rule of thumb by which it is possible to determine what thickness of cork insulation is required for any given roof. The thickness of insulation is an exact function of the humidity present, the nature of the wall or roof construction, its own co-efficient of heat transmission, and the maximum temperature difference on the two sides of the building construction. In order to facilitate the determination of the correct thickness of corkboard insulation for roofs, a special chart has been included in this section (see page 17) upon which it is possible to read directly the permissible heat loss for any given set of conditions. Upon page 16 will be found a table showing the heat loss of all common types of roof construction. Under each type is shown the heat loss of that construction with various thicknesses of "Jointite" Corkboard Insulation. Typical cases are also shown graphically in illustrations on page 11.

The easiest way of demonstrating the use of the chart, table and illustrations will be to show the working of an actual case. Following is a typical problem: A manufacturing plant is equipped with a 3-in. yellow pine roof and standard ⅝-in. built-up roofing. The inside temperature (dry bulb) at the ceiling is 70° F., the relative humidity is 80%, and the lowest temperature during the winter is minus 10° F.

Locate the line of 70° upon the room temperature scale at the top of the chart and follow down to the 80% relative humidity diagonal. Follow horizontally across the chart to the line of 80° maximum temperature difference on the lower scale. Interpolation between the bounding heat loss diagonal lines will show the heat loss to be .124. Referring to the heat transmission table, we find that in connection with a 3-in. yellow pine roof and ⅝-in. built-up roofing, 1½ in. of Mundet "Jointite" Corkboard will give sufficient insulation to preclude the possibility of condensation for the above set of conditions.

SPECIFICATIONS

Note: The following specifications will be found to cover the usual typical cases of roof insulation:

1

On Wood Deck Construction

On top of wood deck, first apply a single layer of .... roofing felt laid in hot asphalt with joints lapped 3 in. Following this lay one course of .... in. Mundet "Jointite" Corkboard, laid in a heavy mop coat of hot asphalt, the exposed cork surfaces to be left dry, ready for the application of the roofing.

2

Over Concrete Construction

On top of the concrete roof slab first apply two coats of asphalt primer, following which .... in. Mundet "Jointite" Corkboard is to be laid in a heavy mop coat of hot asphalt, the exposed cork surfaces to be left dry, ready for the application of the roofing.

3

Over Steel Roof Decks

On top of steel deck lay one course of .... in. Mundet "Jointite" Corkboard, laid in a heavy mop coat of hot asphalt, the exposed cork surfaces to be left dry, ready for the application of the roofing.

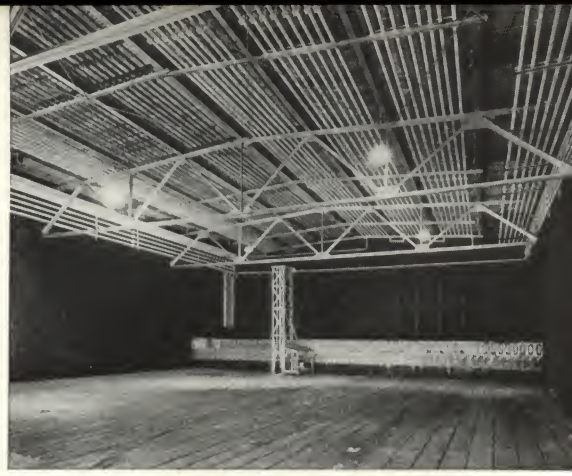
Note: Should roof insulation consist of two-layer work, the second course shall be applied on top of the first course in a dip coat of hot asphalt, with all transverse joints broken.

Heat Transmission

TABLE SHOWING HEAT LOSSES THROUGH ROOFS

Construction	Transmission in B.t.u. per sq. ft. per degree difference in temperature per hour
2-in. concrete slab and roofing, no insulation	.658
2-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.206
2-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.153
2-in. concrete slab and roofing, 2 -in. Jointite Corkboard	.122
2-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.087
2-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.067
3-in. concrete slab and roofing, no insulation	.610
3-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.201
3-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.151
3-in. concrete slab and roofing, 2 -in. Jointite Corkboard	.120
3-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.086
3-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.067
4-in. concrete slab and roofing, no insulation	.568
4-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.197
4-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.148
4-in. concrete slab and roofing, 2 -in. Jointite Corkboard	.118
4-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.085
4-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.066
6-in. concrete slab and roofing, no insulation	.500
6-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.187
6-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.143
6-in. concrete slab and roofing, 2 -in. Jointite Corkboard	.115
6-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.083
6-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.065
2-in. Yellow Pine and roofing, no insulation	.345*
2-in. Yellow Pine and roofing, 1 -in. Jointite Corkboard	.160
2-in. Yellow Pine and roofing, 1½-in. Jointite Corkboard	.127
2-in. Yellow Pine and roofing, 2 -in. Jointite Corkboard	.105
2-in. Yellow Pine and roofing, 3 -in. Jointite Corkboard	.078
2-in. Yellow Pine and roofing, 4 -in. Jointite Corkboard	.062
3-in. Yellow Pine and roofing, no insulation	.256*
3-in. Yellow Pine and roofing, 1 -in. Jointite Corkboard	.138
3-in. Yellow Pine and roofing, 1½-in. Jointite Corkboard	.112
3-in. Yellow Pine and roofing, 2 -in. Jointite Corkboard	.095
3-in. Yellow Pine and roofing, 3 -in. Jointite Corkboard	.072
3-in. Yellow Pine and roofing, 4 -in. Jointite Corkboard	.058
Sheet steel deck, no insulation	1.000†
Sheet steel deck and roofing, 1 -in. Jointite Corkboard	.231
Sheet steel deck and roofing, 1½-in. Jointite Corkboard	.167
Sheet steel deck and roofing, 2 -in. Jointite Corkboard	.130
Sheet steel deck and roofing, 3 -in. Jointite Corkboard	.091
Sheet steel deck and roofing, 4 -in. Jointite Corkboard	.067
4-in. hollow tile, ⅝-in. roofing, no insulation	.485‡
4-in. hollow tile, ⅝-in. roofing, 1 -in. Jointite Corkboard	.187
4-in. hollow tile, ⅝-in. roofing, 1½-in. Jointite Corkboard	.142
4-in. hollow tile, ⅝-in. roofing, 2 -in. Jointite Corkboard	.114
4-in. hollow tile, ⅝-in. roofing, 3 -in. Jointite Corkboard	.083
4-in. hollow tile, ⅝-in. roofing, 4 -in. Jointite Corkboard	.065
6-in. hollow tile, ⅝-in. roofing, no insulation	.398‡
6-in. hollow tile, ⅝-in. roofing, 1 -in. Jointite Corkboard	.171
6-in. hollow tile, ⅝-in. roofing, 1½-in. Jointite Corkboard	.133
6-in. hollow tile, ⅝-in. roofing, 2 -in. Jointite Corkboard	.109
6-in. hollow tile, ⅝-in. roofing, 3 -in. Jointite Corkboard	.080
6-in. hollow tile, ⅝-in. roofing, 4 -in. Jointite Corkboard	.063

*On yellow pine, nominal thickness specified, actual thickness used in tests.
†Factor as furnished by the Truscon Steel Co.
‡½-in. plaster on underside and 2-in. concrete roof slab over tile is assumed.



USE OF CHART

Locate the room temperature on Room Temperature Scale at top of chart and follow down on the corresponding line to its intersection with the line which represents the required humidity percentage, finding this point by interpolating, if necessary, on that segment of the vertical line between the diagonal lines, to obtain any required intermediate percentage between those shown in the left-hand column. For the sake of explanation the horizontal line so found will be referred to as the "humidity horizontal" for any particular case in point.

Next, determine the point of maximum difference in temperature on the scale at the bottom of the chart and follow up on the corresponding vertical line until it intersects the "humidity horizontal" and consider the point of intersection as point "A." Note where point "A" lies between two of the diagonal lines which represent amount of heat loss, and by interpolation between these light lines determine its value as compared to the figures in the right-hand column. The value so found will be the maximum allowable heat loss.

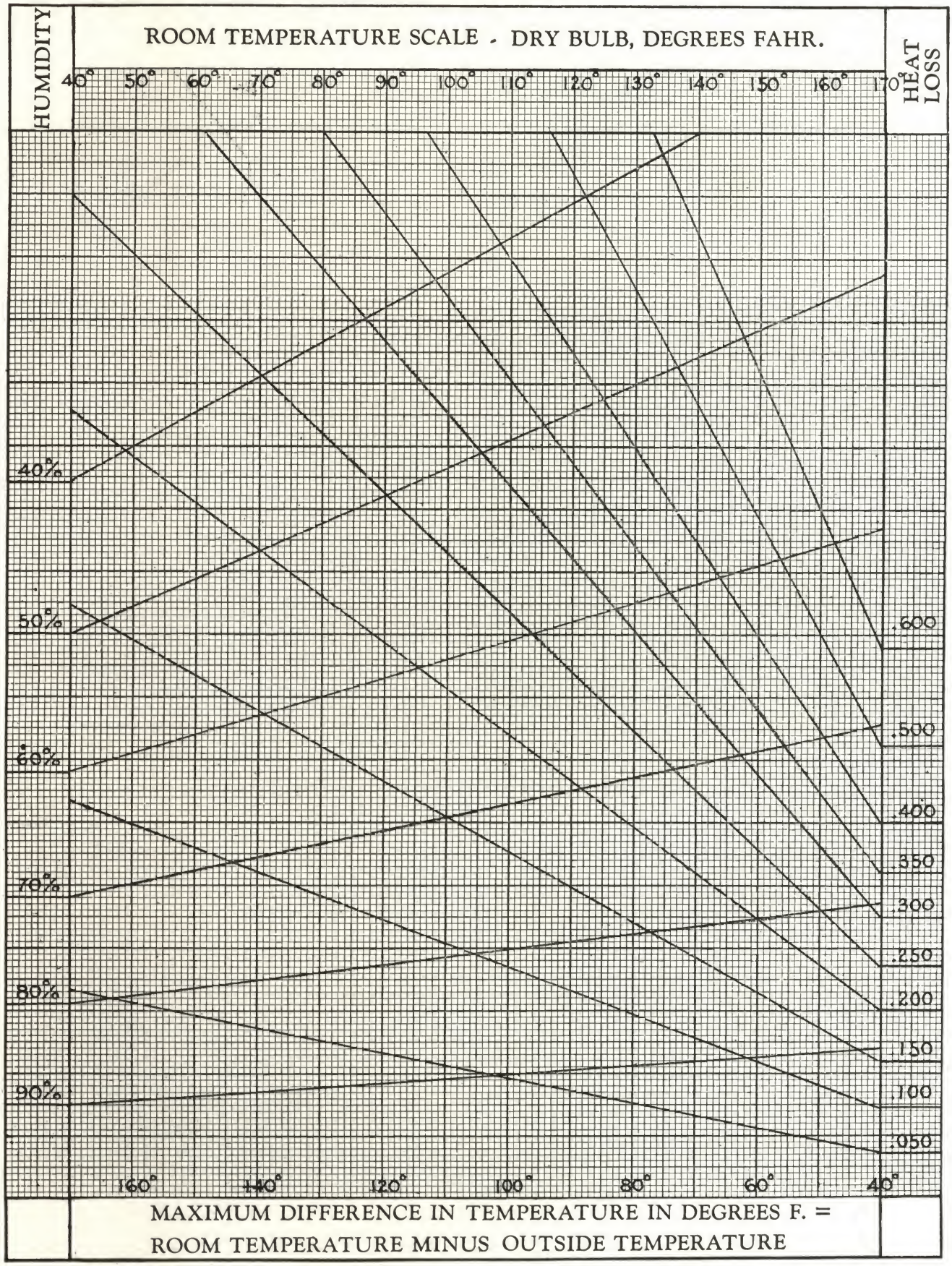
Determine from the Table of Heat Loss the thickness of insulation which will show a heat loss less than the value of "A" using the section of the table which shows the proposed type of construction combined with the insulation.

See also typical construction details showing heat loss tabulation.

Mundet Acoustical Corkboard performs a dual function in this church. In addition to furnishing necessary acoustical correction it insulates the ceiling

HEAT LOSS CHART

For Determining the Maximum Allowable Heat Loss in Roofs to Prevent Condensation



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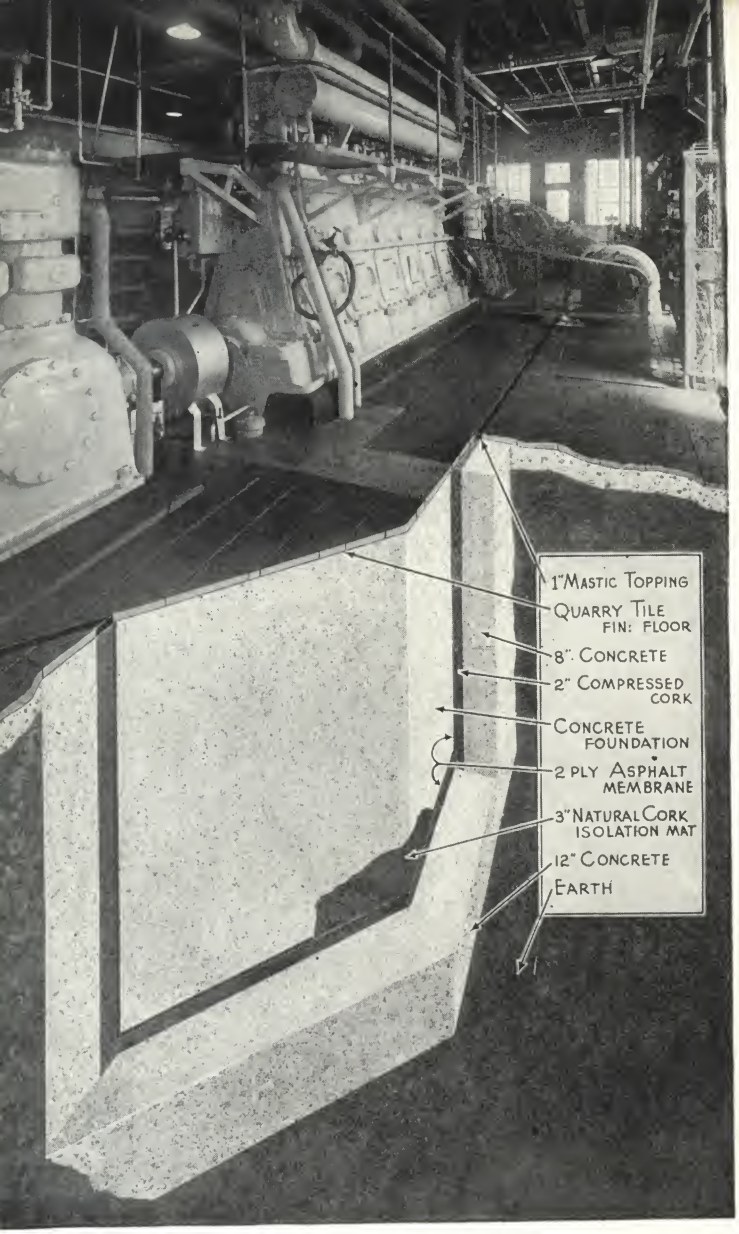
Vibration Isolation • • • •



Among the multitudinous uses to which cork has been applied, the one which is expanding most rapidly at the present time is the utilization of its peculiar physical characteristics in the elimination of machine vibration.

The principal characteristics of a medium for machinery isolation in the order of their importance, are:

(1) Ability to support the loads imposed upon it without too great, *or too variable,* a deflection.

(2) Ability to absorb vibration in the machine without transmitting it to the surrounding structure.

(3) Permanence, including ability to withstand repeated loading without fatigue or permanent set, ability to withstand the action of water, oil, acids or alkalis without deterioration, ability to maintain its resilience with age.

Of the many materials that have been used for isolation purposes at one time or another, cork has proved itself to be pre-eminently fitted for this work. It contains over 50% air by volume, and is made up of a myriad of tiny cells, hermetically sealed from each other by the structure of the wood. Its compression curves, therefore, resemble more nearly those of a gas than of an elastic solid, as is evident on page 19. This feature is important, because the resistance to loads, instead of being proportional to the amount of deflection, is proportional to the compression in the air cells; hence, under vibratory variations in loading, the active deflection is much smaller than for an elastic substance, while the cushioning effect is higher.

Cork isolation has proven itself under the pragmatic test of use, and many thousands of installations, some of them over a quarter of a century old, are giving complete satisfaction; often making possible the use of machines which without it could not be used in their present locations because of the vibration accompanying their operation.

Type of Cork Isolation to Use

Mundet Cork Isolation is made in two general types to conform with the class of loadings imposed upon it. They are as follows:

(1) Mundet Natural Cork Isolation Mat—This form of cork isolation is suited to loads of about 800 to 2000 lb. per sq. ft., normally encountered in machinery foundations. Blocks of natural cork of the required thickness are held within a rigid steel frame or are bound with asphalt paper applied in hot asphalt to the top and bottom sides of the strips. The plates when laid together form a continuous mat isolation of the exact size necessary. For isolating a machine in a pit with an envelope of cork, as shown in the illustration herewith, it is customary to use asphalt paper bound natural cork isolation mat. Where the machine is mounted on a floor slab without side isolation, it is customary to use steel bound natural cork isolation mat.

In the case of average machine vibrations 1½ to 2 in. of natural cork is adequate, but for more intense vibrations or shock loads, the thickness should be increased to 3 or 4 in.

(2) Mundet Machinery Isolation Cork—This is the material first used as isolation cork and, while it has been superseded by the above material for light and medium loads, for loads above 2000 lb. per sq. ft., Mundet Machinery Isolation Cork has not been surpassed. This cork is made in sheets, of various thicknesses, and in three densities, namely, light, medium and heavy.

For loadings of 2000 to 3000 lb. per sq. ft., it is customary to use either light or medium density, according to the character of the vibration. Light density is used for light vibrations and medium density for heavy vibrations. From 3000 to 3500 lb. per sq. ft., either medium density or heavy density is used, according to the character of the vibratory load, and from 3500 to 6000 lb. per sq. ft., it is customary to use heavy density. The thicknesses of machinery isolation cork used depend upon the frequency and amplitude of the vibration present, but the most common thicknesses employed are 1½, 2, 3 and 4 in.

PROVISION PLANTS

Federal Packing Co., New Haven, Conn.
Wm. A. Donnelly, Philadelphia, Pa.
Western Produce Co., Abiline, Tex.
Hildebrandt Provision Co., Cleveland, Ohio
International Produce Co., Chicago, Ill.
Providence Produce Terminal, Providence, R. I.

Specifications and Information on the Selection of MUNDET ISOLATION CORK

Machinery Isolation Cork is composed of granules cemented together in the process of manufacture which is the same as that of corkboard. It contains more cork per cubic foot than the natural cork isolation mats. It is structurally strong, but must have a higher initial loading than natural cork isolation mat before it equals the latter in efficiency as an isolation medium. The densities in pounds per cubic foot are:

Light, 1.00-1.30; Medium, 1.30-1.50; Heavy, 1.50-1.70. A special 1.80-1.90 density is available for severe vibrations combined with exceptionally heavy loads, but this should be used sparingly.

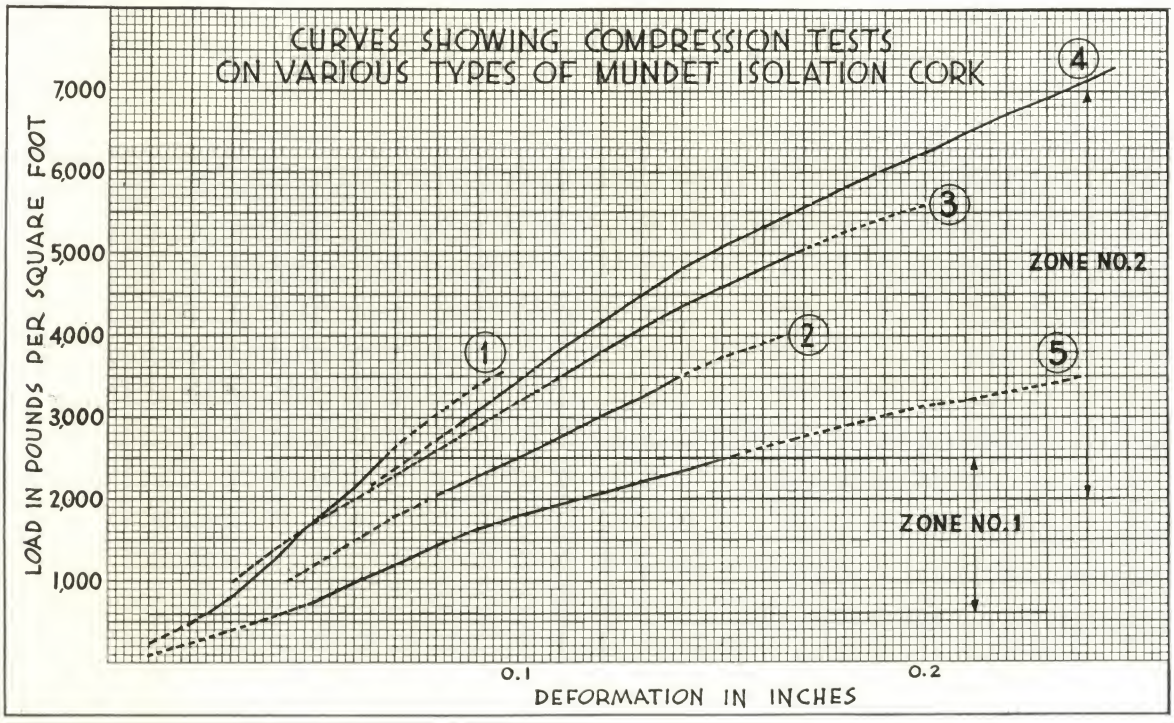
Shipment—All of the isolation listed is carried in stock with the exception of steel board of Mundet Natural Cork Isolation Mat, and any type of isolation, whether granulated or natural mat, can be shipped within 48 hours after the receipt of an order by our factory. Mundet Machinery Isolation Cork is stocked in our various branch warehouses for immediate shipment.

Specification for the Installation of Mundet Cork Isolation

(In a pit where monolithic concrete base is to be cast upon the cork.)

The sides and bottom of all machinery pits which are to receive isolation shall be true and even, as well as clean, smooth and dry, before cork isolation is applied.

The sides and bottom of all machinery foundation pits shall be lined with a layer of Mundet (*specify type of cork*). Bottom isolation shall be ..... in. thick and side isolation shall be ..... in. thick. The side and bottom cork shall be laid in a heavy mop coat of hot asphalt and the exposed surfaces protected with two layers of waterproofing felt, mopped in, with all edges lapped at least 6 in.



The above chart is included to assist the designer in selecting isolation cork. The curves are numbered and correspond to test pieces as follows:

(1) Mundet Natural Cork Isolation Mat—1½ in. thick.

(2) Mundet Machinery Isolation Cork—light density—2 in. thick.

(3) Mundet Machinery Isolation Cork—medium density—2 in. thick.

(4) Mundet Machinery Isolation Cork—heavy density—2 in. thick.

(5) Mundet Natural Cork Isolation Mat—3 in. thick.

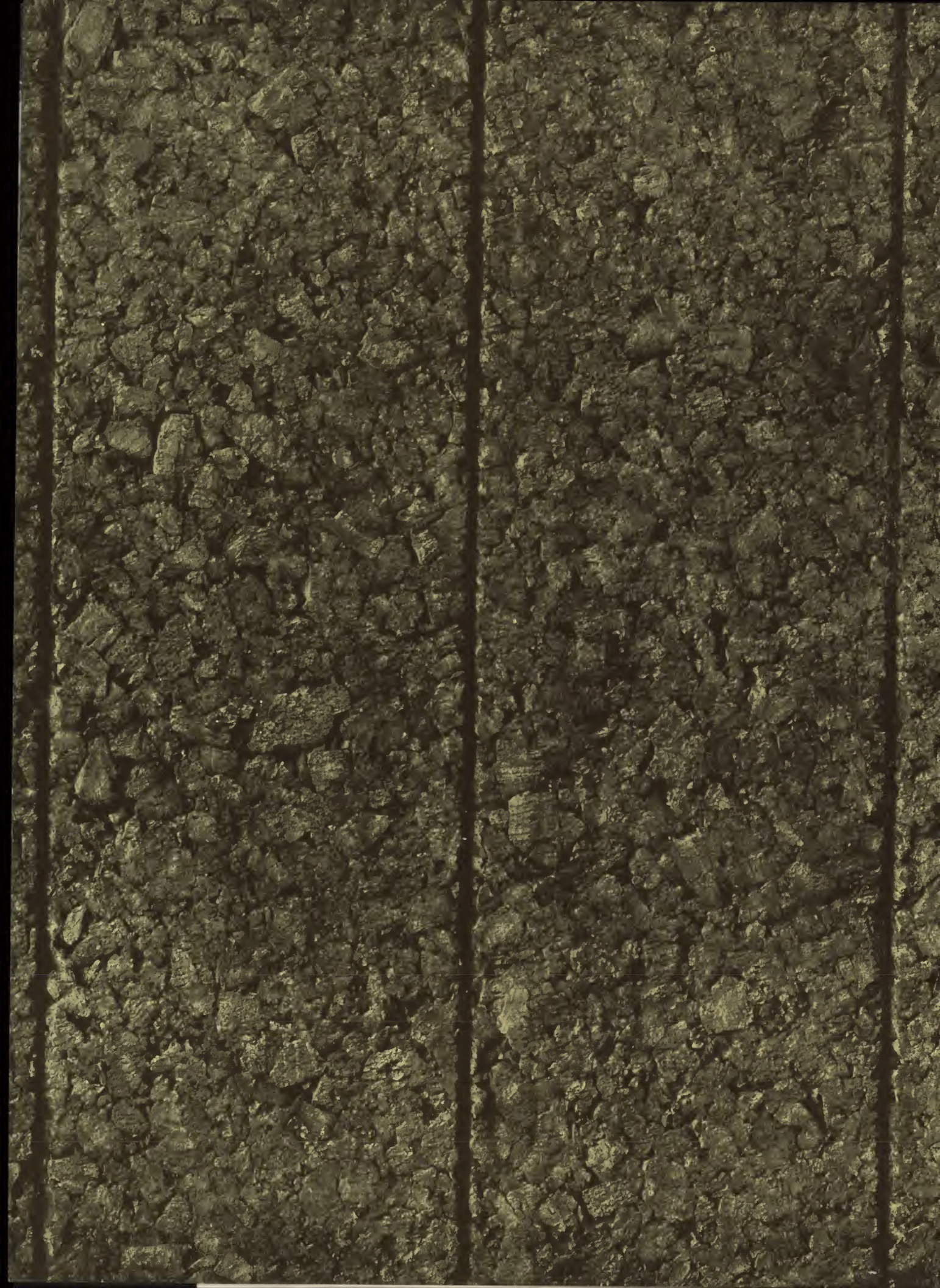
The thicknesses selected are those most commonly used in general practice. Curve No. 6 is included primarily to show that the amount of compression varies directly with the thickness of isolation used. This is true of all forms of cork isolation. Vibration absorption also varies approximately with thickness of isolation used.

The chart is divided into zones which show the recommended load limits. The curves are shown as solid lines within the zone limits, and their behavior outside of these limits is shown by the dotted extensions.

Zone No. 1 is for Mundet Natural Cork Isolation Mat.

Zone No. 2 is for Mundet Machinery Isolation Cork.

Mundet cork has been tested for static loads up to 15,000 lb. per sq. ft. Further information upon this subject is available. Our Engineering Department will co-operate in the design of machinery vibration isolation. A request directed to the Company or our nearest branch office will receive prompt and competent attention.



UNITED CORK COMPANIES

Manufacturers, Engineers and Contractors for Refrigeration Insulation, Sound and Vibration Absorption

LYNDHURST, N. J.

SALES OFFICES AND WAREHOUSES

BALTIMORE, MD.
BOSTON, MASS.
TAUNTON, MASS.
ALBANY, N. Y.
BUFFALO, N. Y.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
HARTFORD, CONN.
INDIANAPOLIS, IND.
MILWAUKEE, WIS.
NEW YORK, N. Y.
PHILADELPHIA, PA.
PITTSBURGH, PA.
ROCK ISLAND, ILL.

Company

Pioneers in Corkboard Insulation with over 25,000 installations during past 30 years. Our organization and sales offices comprise specialized refrigerating engineers and trained field erection workers with long years of practical experience in cold insulation work.

Service

Complete Sales and Warehouse facilities in leading cities. Experienced engineers and expert construction men handle complete job from start to finish including designing and erection. Our Engineering Department will gladly co-operate with architects and engineers in designing, preparing drawings, making specifications, etc., on any problem involving the use of cork.

UNITED'S 100% Pure Cork Insulation

UNITED'S Corkboard is 100% pure, screened, granulated cork compressed into moulds and then baked. No artificial binder is used. The heat conductivity of UNITED'S 100% Pure Corkboard averages 0.27 B.t.u. per sq. ft. per degree difference in temperature per hour per inch thickness. Size of boards 12x36 ins., 18x36 ins., 24x36 ins., from 1 to 6 ins. thick.

Adaptable to all kinds of construction. Can be cut, sawed or nailed like lumber. Sanitary, remains dry; will not rot or mould after erection. Light in weight, fire-resistant, compact, taking a minimum of space.

Natural Granulated Cork

Natural Granulated Cork is primarily used in fills requiring the qualities and strength of natural cork.

Re-granulated Cork

This is a by-product obtained in the manufacture of corkboard. It has no capillarity and its insulation value is higher than natural granulated cork. It is odorless, non-absorbent, does not support combustion; is not subject to decay.

Cork Covering

A most efficient, economical insulation for brine, ammonia, ice or cold lines. The fitting covers are moulded to conform to the shape and size of fittings. It is finished with a coating of mineral rubber and is applied with waterproof cement which assures imperviousness to moisture.

UNITED'S Cork Lagging

Beveled to any desired radius without finish, coated one side, or both sides with mineral rubber finish. Furnished for covering cylindrical brine tanks, ammonia accumulators, ice water tanks, filters, etc.

UNITED'S Machinery Isolation Corkboard

Because of its natural elasticity and vibration absorption qualities, is a logical material for absorbing vibrations and noise caused by pumps, fans, compressors, generators, motors, steam hammers, presses, etc.

UNITED'S Cork Brick

Consists of a mixture of finely ground cork and specially prepared asphalt binder. They make a floor which is warm and comfortable. They do not rot, chip or splinter; will sustain exceptionally heavy loads and are especially adaptable for cow barns, stables, workshops and farm floors. They are never slippery, wet or dry. Size 1¾" or 2" x 4" x 9". Laid flat, four will cover a sq. ft. Weight, approximately 2½ lbs. each.

UNITED'S Cork Tile Flooring

Manufactured in three shades of brown and in many sizes. Either $\frac{5}{16}$ or ½ in. thick as desired. A quiet, dignified, resilient floor. Ask for Cork Tile Catalogue.

UNITED'S Cork Bulletin Boards

¼ in. thick unmounted; ½ in. thick mounted, and in various sizes up to 4 x 6 ft.

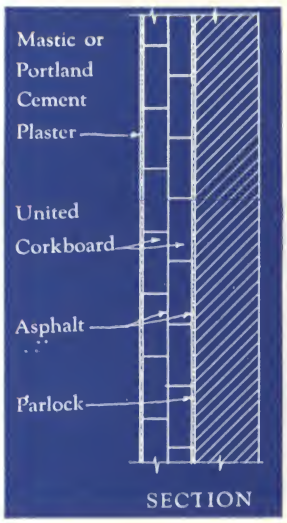
UNITED'S Acoustical Corkboard

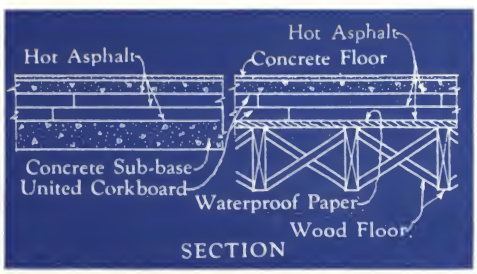
Usually applied 1½" thick, at which thickness it has a sound absorption value of approximately 60% at a frequency of 512. Combines noise quieting and vibration absorption with high heat insulating value. Can be painted to harmonize with decorative scheme.

Write for our General Catalog for other and more Detailed Specifications

TYPICAL UNITED'S CORKBOARD SPECIFICATIONS

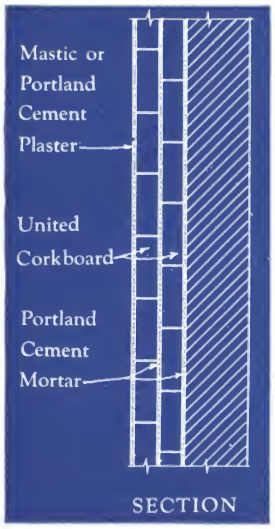
Left: Specification No. 4





Specification No. 12

Right: Specification No. 2



THE KORFUND CO., INC.

Manufacturers of Vibration Isolation Material
4813 Thirty-second Place, LONG ISLAND CITY, N. Y.
REPRESENTATIVES IN PRINCIPAL CITIES

KORFUND PRODUCTS
DEADEN VIBRATION & NOISE

Uses

The Korfund System of Vibration Isolation includes specially treated natural cork mats and mechanical spring devices for all machinery, among which are Diesel engines, steam engines, printing presses, cutters, binders, linotypes, monotypes, power hammers, punch presses, fans, motors, coal pulverizers, refrigerating machines, air compressors, air conditioning machinery, business machines, special and automatic machinery, paper making machinery, pumps, oil burners, radio transmitters, sensitive scientific apparatus, elevator machinery and machine tools.

Engineering Service

In our 30 years' experience we have learned that to secure proper results the characteristics of the apparatus to be cushioned must be known and considered before adequate permanent isolation can be selected. All our isolating devices are built for specific purposes and loadings. Frequently this factor and others cannot be known at the time plans and specifications are written. Therefore architects and engineers with whom we have worked include in their plans and specifications, "these (or all) machines are to be isolated by the Korfund System of Vibration Isolation." The Korfund Engineering Department can, after the specific make of apparatus is purchased or decided upon, consider the size, weight, etc.; then select, quote and build isolation which their experience indicates will definitely and permanently absorb vibrations as desired by the architect.

ALL MACHINERY SHOULD BE ISOLATED AGAINST VIBRATION

Every machine has a tendency to vibrate on its base regardless of the most critical balance of design. Modern engineering has discovered the fallacy of rigidly bolting a machine to a massive foundation in an attempt to eliminate vibration. Every machine should be cushioned to allow for the forced frequency of vibration of the unit and its foundation. Excessive wear on machinery, interference with the maintenance of critical adjustment, lowered efficiency of operatives, and an increasing number of accidents are some faults which careful cushioning and adequate isolation eliminate. Isolating with natural cork or springs allows perfectly smooth, free operation of the machine, yet prevents the transmission of vibration into the building structure or adjoining ones. Transmitted vibration has many times been proven a nuisance and the basis for legal action.

Raw material alone is not the solution to vibration troubles. In addition proper arrangement and assembly of isolating material is vital. This requires a thorough knowledge of the engineering principles involved. Designs for Korfund Isolation conform to such laws and to the specific installation.

KORFUND PRODUCTS FOR VIBRATION ISOLATION

Korfund (Steel-bound)

Uses—Prime movers, printing presses, motors, pumps, elevator machines, etc.

Description—A resilient mat of pure natural cork, bound in a steel frame, treated with a heavy, non-volatile oil. Unaffected by water, oil, acids and temperature changes. *Loadings:* Between 1000 and 4000 lbs. per sq. ft. depending upon arrangement. *Application:* Korfund Plates are laid under foundation blocks, or loading may be distributed by planking or steel plate. *Sizes:* All plates made to order, standard thicknesses, 1½, 2 and 3 ins. The 3-in. plates for machines causing intense vibration.

Write for Bulletin 51-C for complete information on this material.

Korfund Base Isolator

Uses—All types of machines, but especially designed for the isolation of depressed foundations.

Description—A resilient mat of pure natural cork strips or blocks, top and bottom surfaces bound with asphalt and asphalt felt. Material is identical with Korfund in construction, except in the method of binding the cork strips. *Loadings:* Identical to Korfund. *Application:* Plates are applied directly to base and sides of foundation pits. By sealing joints, installation presents a watertight surface for pouring concrete. *Size:* Standard plate 24x48 ins. Plates cut to order, or may be cut with hand saw on job.

Write for Bulletin 51-C for complete information on this material.

Korfund Side Isolator

Uses—For the isolation of sidewalls of foundation pits.

Description—Plates consist of frame of natural cork with a sound absorbing filler, top and bottom surfaces bound with asphalt and asphalt felt, combining the structural strength of natural cork with the high resiliency of the granulated cork. *Loading:* The maximum loading of 500 lbs. per sq. ft. is seldom if ever applied to side isolation. *Application:* Plates are applied with mastic or hot asphalt to sidewalls. *Size:* Standard plates 25x37 ins., 1, 1½ and 2-in. thicknesses. Other sizes and thicknesses to order. Plates may be cut with hand saw.

Write for Bulletin 51-C for complete information on this material.

Korfund Kompo-Kork

Uses—For the isolation of light machinery, for the side isolation of foundations, or for base isolation when clearance is not sufficient for 1½-in. Korfund.

Description—Plates of finely granulated compressed cork with an oxidized linseed oil binder, and a burlap backing. *Loading:* Up to 500 lbs. per sq. ft. *Application:* Kompo-Kork is particularly adaptable where irregularly shaped plates of isolation are required, or in extremely narrow widths under timber skids. It is readily cut to shape. *Size:* Up to 6x6 ft. in multiples of ½-in. thickness.

Special drawings showing use and application of this material are available upon request.

Korfund Vibro Damper

Uses—For all types of machines. Bolted directly to base of machine or imbedded in concrete foundations.

Description—An adjustable spring device consisting of an arrangement of steel springs in a metal housing. *Loading:* There are five sizes of Vibro Dampers ranging in loading from 50 to 10,000 lbs. per damper. *Application:* The ease of installation is a feature of the damper which makes it applicable to existing as well as new installations.

Write for Bulletin 53-B for complete information on this device.

Korfund Seismo-Damper

Uses—Especially designed for the isolation of all of the lighter types of machines, and machine tools.

Description—A device consisting of a resilient material (cork, rubber, etc.) inserted between an upper and lower steel housing, and preloaded to exactly that point which compensates for the difference between the loading of the machine and the peak efficiency loading required by the isolating material. *Loading:* Maximum 400 lbs. each damper. *Application:* Dampers are bolted directly to the base or legs of the machine. *Size:* 3x5x1½ ins.; supporting surface 3x3 ins.

Write for bulletin giving complete information on this device.

Korfund Vibro-Plate

Uses—The isolation of business machines, oil burners, light fans and motors, etc.

Description—No single material will permanently and effectively isolate the relatively slight but complex vibrations of the light machines found in every office, shop and home. Vibro-Plate, however, has a permanently elastic core consisting of a combination of several extremely resilient materials enclosed in a sturdy metal housing. *Loading:* Up to 400 lbs. each pad. *Application:* Pads are applied directly under the legs or base of the machine. Vibro-Plate can be furnished with anchor bolts for fastening to machine if unit is inclined to shift in operation. *Size:* 4x4x1¾ ins. Special plates to order.

Write for bulletin giving complete information on this material.

Korfund Spring Base

Uses—For isolation of entire floors or small machine bases.

Description—Consists of an arrangement of sensitive double-acting spring chairs so designed as to resiliently suspend the floor sleepers or machine platform. *Loadings:* Maximum 250 lbs. each spring chair. *Application:* Although installation and construction of Spring Bases are very simple, the correct arrangement of the spring chairs is vitally important; therefore, the services of our Engineering Department are available for designing each installation. *Size:* 8½x1¼x1$\frac{3}{16}$ ins. each chair (for 2 or 4-in. sleepers).

Write for bulletin giving complete information on this device.

RAY PROOF CORPORATION

MANUFACTURERS AND CONTRACTORS

X-Ray Proofing and Light Proofing Materials
Design, Layouts, Construction, Installations

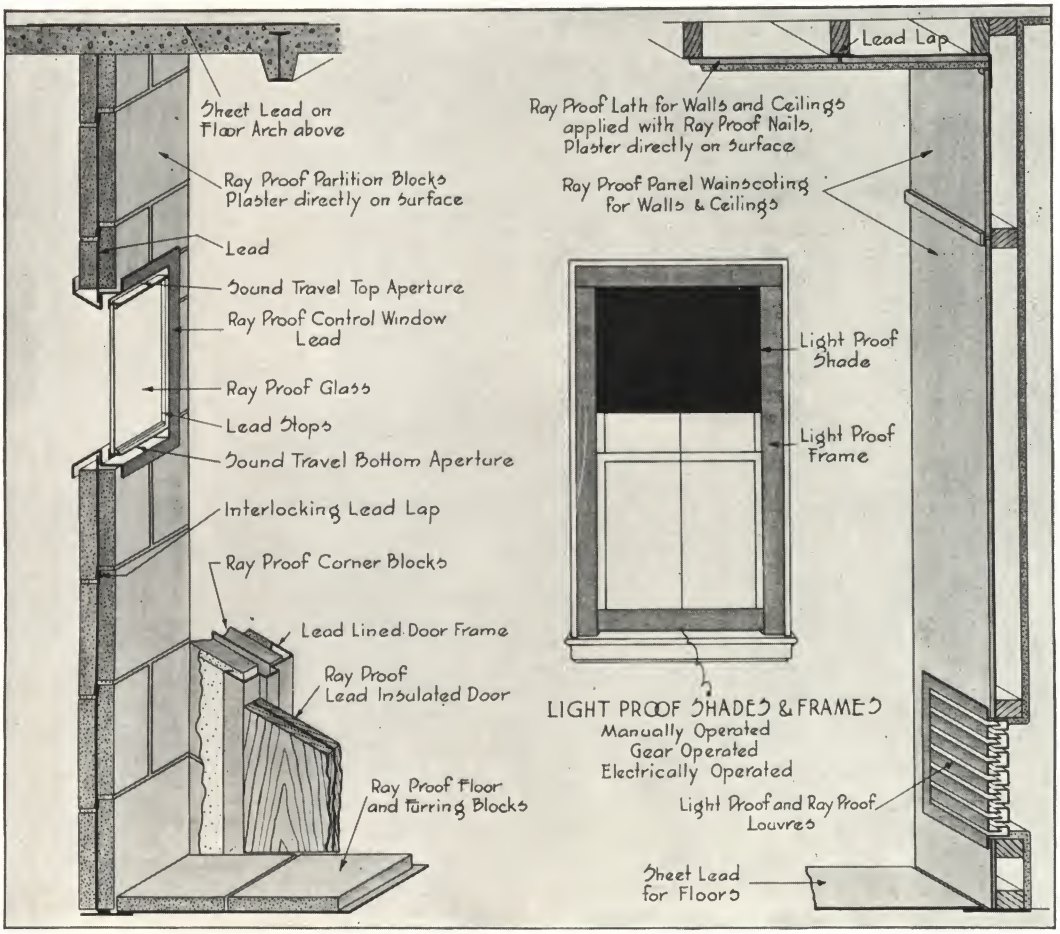
TELEPHONE
SHore Road 5-3716

6905 Ridge Boulevard, BROOKLYN, N. Y.

OFFICES IN PRINCIPAL CITIES

RAY PROOF MATERIALS AND METHODS

X-Ray Protection TRADE MARK RAY PROOF REG. U.S. PAT. OFF. *Light Proof Shades*



Architects Who Have Specified Ray Proof Materials

Grosvenor Atterbury, New York
J. Evans Sperry, Baltimore
*Crow, Lewis & Wick, New York
Sutton & Sutton, Newark
Lafaye & Lafaye
Hoffman-Henon, Philadelphia
*M. H. Goldstein, New Orleans
Schenck & Williams
Sloan & Robertson, New York
*Ebbets & Frid, Hartford
LeRoy P. Ward, New York
*Cudworth & Thompson, Norwich
*Kendall, Taylor & Co., Boston
Henry C. Pelton, New York
J. Russell Pope, New York
Waid & Corbett, New York
F. J. & W. A. Kidd, Buffalo
Paul C. Reilly, New York
Zantzinger, Borie & Medary, Philadelphia
Frost, Chamberlin & Edwards, Worcester
William S. Gregory, New York
*C. B. Meyers, New York
Eric Flanagan
Horace Trumbauer, Philadelphia
Cass Gilbert, New York
Stevens & Lee, Boston
William C. Haugaard, New York State
Coolidge, Shepley, Bullfinch & Abbott
Maul & Lentz, Detroit
Schmidt, Garden & Erickson, Chicago
T. D. McLaughlin & Assoc., Boston
Ritchie & Assoc., Boston
George E. Robinson, Boston
Tudor R. Williams, Scranton
Ritter & Shay, Philadelphia
York & Sawyer, New York

**Repeated specifications.*

A Partial List of Ray Proof Jobs

Worcester Hospital, Mass.
Nassau County Sanatorium, N. Y.
Holmdel State Hospital, N. J.
Hartford Municipal Hospital, Conn.
Evangelical Deaconness Hospital, Brooklyn, N. Y.
Wills Hospital, Phila., Pa.
Laurel Heights Hospital, Conn.
Good Samaritan Hospital, Ohio
Zurbrugg Memorial Hospital, N. J.
Lincoln Hospital, N. Y.
Brooklyn State Hospital, N. Y.
Flint Goodridge Hospital, New Orleans, La.
Windham Community Hospital, Conn.
Lima City Hospital, Ohio
Wethersfield High School, Conn.
Provident Hospital, Chicago
Providence Hospital, Detroit
Millard Fillmore Hospital, Buffalo
U. S. Veterans Hospital, Togus, Me.
U. S. Veterans Hospital, Bronx, N. Y.
Health Unit No. 4, Boston
Health Unit No. 7, Boston
Eloise Hospital, Eloise, Mich.
Mt. Sinai Hospital, N. Y.
Fitzgerald Mercy Hospital, Phila., Pa.
Meadowbrook Hospital, N. Y.
Crownsville State Hospital
Metropolitan Life Ins. Co., N. Y.
Boston City Hospital
High School, Boston
Cornell Medical Clinic, N. Y.
Scranton Junior High School, Pa.
Norristown State Hospital, N. J.
Lonergan School, Phila., Pa.
Indian Sanatorium, Albuquerque, N. M.
Union County Court House, N. J.
Harrisburg State Hospital, Pa.
University of Maryland Hospital, Md.
Children's Tuberculosis San., Buena Vista, Md.
Boston State Hospital, Mass.
Skin and Cancer Hospital, Phila., Pa.
Seaside Hospital, Conn.
Rockefeller Center, Radio City, New York City
Montrose Grade School, N. Y.
Great Meadow Prison, N. Y.
Randolph Hospital, Asheboro, N. C.
Women's Hospital, Phila., Pa.
Malden Hospital, Mass.
Polyclinic Hospital, N. Y.
Essex County Hospital, N. J.
Psychopathic Hospital, N. Y.
Lee County Hospital, N. C.
Cedarcrest Sanatorium, Conn.
Orange Memorial Hospital, N. J.
Wyandotte General Hospital
Bloomingdale Hospital, N. Y.
U. S. Marine Hospital, Evansville, Ind.
Grasslands Hospital, N. Y.
Philadelphia General Hospital, Pa.
Western State Hospital
Littleton Hospital, N. H.
U. S. Naval Hospital, Newport, R. I.
Lakehurst Naval Air Station, N. J.
Jeremiah E. Burke High School, Boston, Mass.
Henrotin Hospital, Chicago, Ill.
McLeod Infirmary, Greenville, S. C.
Rensselaer Polytechnic Institute, Troy, N. Y.
Hermann Biggs Mem. Hospital, Ithaca, N. Y.

Specifications and Details Await Your Request

MEMORANDA

LATH, PLASTER AND WALLBOARD

- SECTION -

14

CATALOGS *1 to 25*

MEMORANDA

AMERICAN STEEL & WIRE COMPANY

UNITED STATES STEEL CORPORATION SUBSIDIARY

CHICAGO, ILL.

For List of Sales Offices, see our Electrical Wires and Cables Section

For our pages on Concrete Reinforcement, Electrical Wires and Cables, and Wire Rope, see File Index

ELECTRIC WELD GALVANIZED WIRE FABRIC FOR PLASTER AND STUCCO REINFORCEMENT

Description and Uses

Perfected Plaster-Stucco Reinforcement, Styles PS—14 and PS-16—A combined wire lath and reinforcement for interior and exterior work. Wire lath and paper back are one unit. Shipped in crates of perfectly flat sheets (one man size), 34x52 in.

51 sheets of fabric are packed in a crate approximately 70 sq. yds. Sufficient galvanized or blued hook head nails for proper application of the fabric are supplied with each crate.

Fabric extends beyond paper to allow proper lapping of adjacent sheets. No. 14 gauge is used for outside stucco reinforcement and No. 16 gauge for inside plaster reinforcement.

Uses—The PS-14 fabric is used extensively for reinforcing cement or gypsum stucco on new buildings, or for overcoating old wood, brick or stone structures.

Style PS-16 is used for inside plaster work.

Paper Back—Heavy kraft paper for inside use. 2-ply waterproofed paper for exteriors or for use with termite treated lumber.

Advantages

PS-14 and PS-16 provide a positive reinforcement of the stucco or plaster. The 2x2-in. square mesh openings are of sufficient size to allow the stucco or plaster to be pushed through and to completely embed the galvanized wire. Galvanized steel prevents rusting thereby providing a lasting construction of low first and installation costs. Paper backing, in addition to preventing loss of the expensive plaster material by acting as a form for the plastic stucco or plaster, also provides adequate insulation.

Economy

The economy of paper back galvanized wire fabric lies in its efficiency, low first cost, low installation cost and long life.

Application

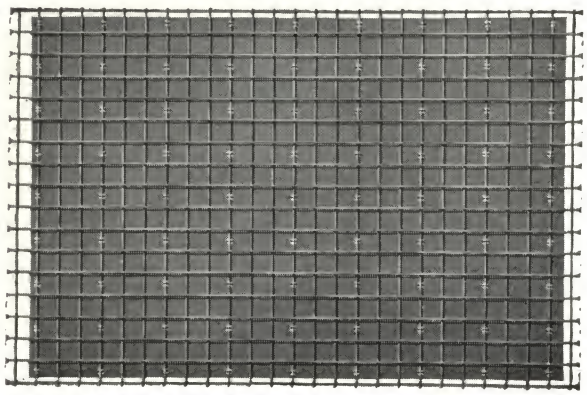
Styles PS-14 and PS-16 (Paper Back) can be applied directly to the studs or to the sheathing or other backing. Use hook head nails supplied with each crate of fabric. The paper back fabric should extend around the corners and the back stiffener wires should span the studding. Self-furring stucco nails may also be used with this fabric if desired.

PERFECTED PLASTER-STUCCO REINFORCEMENT (PAPER BACK)

Style No.	Wires, face fabric		Back wires		Net weight, lb. per sq. yd.	Gross wt., lb. per sq. yd.
	Gauge No.	Spacing, in.	Gauge No.	Spacing, in.		
PS-14	14	2 x 2	13	4	3.1	3.6
PS-16	16	2 x 2	13	4	2.3	2.8

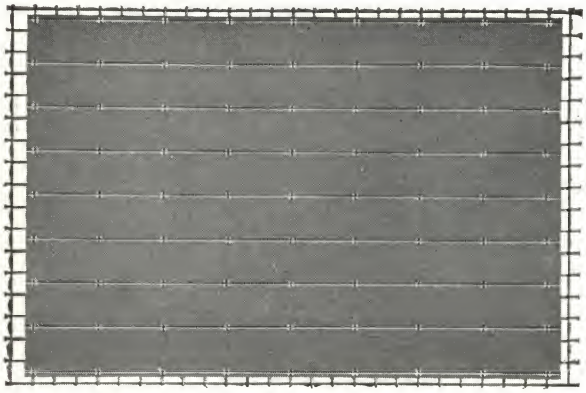
Note: Gross weight per sq. yd. includes weight of crate and nails.

Style PS-14 Self Furring Paper Back Fabric with 2-ply Waterproof Paper Backing for Stucco



Front View PS-16 for Inside Plaster Work

PS-16 Fits Easily Around Window and Door Openings



Back View PS-16 for Inside Plaster Work Showing Stiffener Wires

THE BOSTWICK STEEL LATH CO.

Manufacturers of Metal Lath Continuously Since 1890

TELEPHONE
Bell 836, PBX

NILES, OHIO

EASTERN WAREHOUSE: PHILADELPHIA, PA., 2324-28 Callowhill Street—Telephone: Bell, Locust 0953

A Complete Line of Metal Lath and Accessories

The Bostwick Line is complete, embracing every type of metal lath and lathing accessory. It is distributed throughout America by responsible dealers carrying adequate stock. Twenty-four-hour service is maintained on factory shipments.

Super-Bostwick Truss-Loop Lath—The original Bostwick Lath, improved by a system of transverse ribs giving it unusual stiffness. Maximum reinforcement and lowest plastering costs, with easy handling and application make it a favorite wherever used. Long preferred in wood construction, it is equally advantageous when applied over metal channels.

Bostwick Niles Expanded Lath—Made in small mesh (Niles Jr.) and standard mesh types. It is noted for its true fabrication, perfect rectangularity of sheets and good plastering quality.

Bostwick Bos-Rib (flat-rib) Lath—A superior small mesh lath of the herringbone type, which derives extraordinary stiffness from the angled section of its longitudinal ribs.

Bostwick Vee-Rib (flat-rib) Lath—This lath offers all the plastering economy of this popular type with unusual stiffness due to half-round corrugation in the rib.

Bostwick ⅜-in. Rib Expanded Lath—Popular as a floor lath and also as a plaster base over unusually wide spacings.

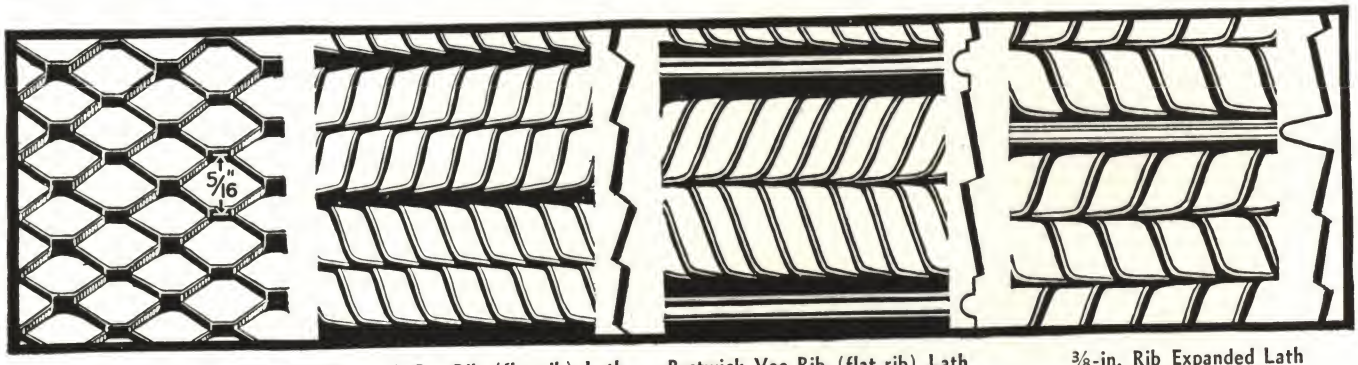
Bostwick Channelform Lath—A distinctive floor slab reinforcement. A modification of Super-Bostwick Lath, it has alternate longitudinal sections raised and depressed to give it a channel section that imparts maximum rigidity. No other floor lath will support a heavier load, and seepage through this lath is much less than in the case of reinforcement of the expanded type. Accepted by building departments everywhere.

Other Bostwick Laths—These include Bostwick ¾-in. Rib Expanded Lath; "Lock" Corrugated Lath, a self-furring expanded lath and Bostwick Stucco Mesh, a large mesh, expanded lath, applied with a furring nail in stucco work.

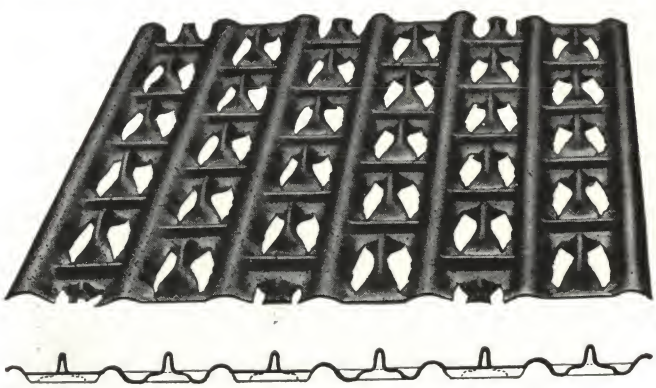
Bostwick Corner Bead—Noted for its true corner line, and is shipped crated to come on the job without distortion. Types include the rigid Truss-Wing bead, distinguished by "B" perforation and several types of expanded bead including ¾-in. bullnose beads.

Lathing Accessories—Include Cornerite, Stripite, Bostwick Steel Channels, Wall Plugs, Wall Ties (Y and straight), Metal Base Bead and Invisible Picture Moulding; as well as Lathing Wire, Lathing Nails and other supplies.

Sizes—All Bostwick Lath, unless otherwise specified, is furnished in 24x96-in. size sheets, 9 sheets (16 yds.) to the bundle. Furnished on request in Armco iron, copper bearing steel. All lath painted or galvanized.

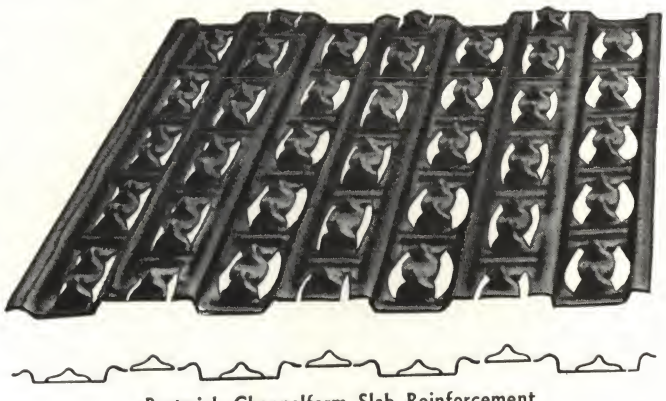


Niles Jr. Lath | Bostwick Bos-Rib (flat-rib) Lath | Bostwick Vee-Rib (flat-rib) Lath | ⅜-in. Rib Expanded Lath



Super-Bostwick Truss-Loop Lath

Showing longitudinal and transverse stiffening ribs as well as famous truss system which make it one of the most rigid plaster bases on the market



Bostwick Channelform Slab Reinforcement

Similar to Super-Bostwick Lath but with series of channels in cross section giving it superlative rigidity

THE GOLDSMITH METAL LATH CO.

MANUFACTURERS

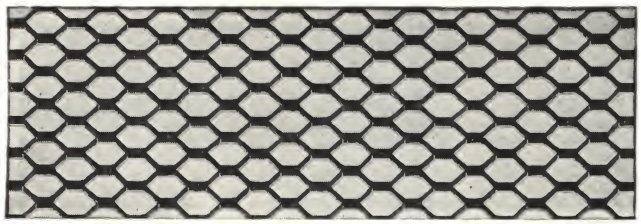
CINCINNATI, OHIO

Shurebond Metal Lath

A perforated plate lath with dovetailed ribs, made in weights per yard of 5.63, 7.2, 9 and 11.25 lbs. Used for slab reinforcement, solid partitions, etc. A sound deadener with real structural value.

Goldsmith Flat Diamond Mesh Lath

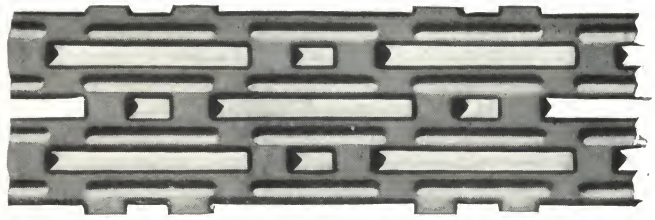
Sheets, 27x96 in.; 2 sq. yds. per sheet. Strands $\frac{1}{16}$-in. wide—greater stiffness. Ends of sheets sheared square—mesh right size for applying mortar of proper consistency. Easier to tie to furring. Also furnished in Cornerlath, Lath Strips or Self-furring. Weights, 2.2, 2.5, 3.0, 3.4 lbs. in plain or copper-bearing steel or pure iron.



Goldsmith Clincher Plate Lath

Sheets, 27x96 in.; 2 sq. yds. per sheet. A lath for rigidity and long life. Brown coat can be immediately applied after scratched, i. e., double up on the work. Ideal as a base for marble and tile work. No metal sheared away. Heavy beading—overlapping of perforation webs produce truss action. Furnished only in 4.5 lbs. per yd. in plain or copper-bearing steel.

A quality product that saves in the ultimate cost of the work.



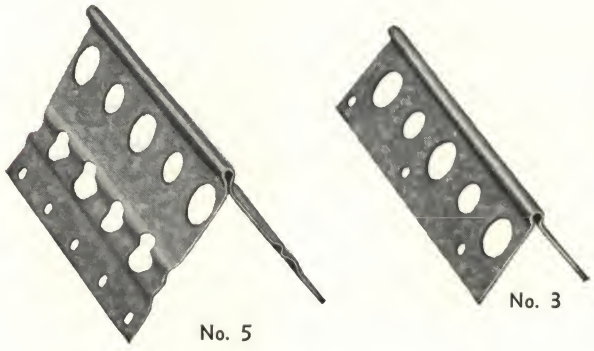
Phoenix Metal Lath, a plate lath with ⅜-in. V Ribs. Weight 4.85 lbs. per yard. Permits of farther spacing of furring

Corner Beads

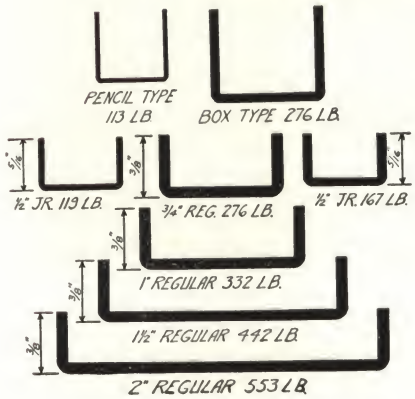
Furnished in 26 or 24-gauge in lengths of 6, 7, 8, 9, 10 and 12 ft. No. 5 eliminates clips—has 2½-in. flanges—specified regularly by Government Departments.

No. 3 has 1¼-in. flanges, is regular stock bead.

For obtaining straight truly protected corners specify Goldsmith Beads.



Cold Rolled Channels



Absolutely straight with perfect right angles and sharp inside bends at the flanges. Stock lengths 20 ft. —other lengths or sizes on special order.

Note: ½-in. Jr. Channels — the channel to use for brackets and light furring — load carrying table upon request.

Shurebond Hollow Partition Studs

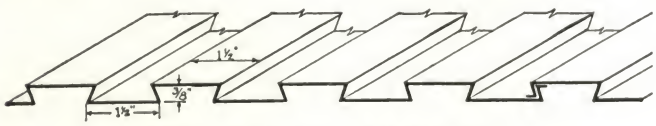
Made to fit details for any thickness partition. Completely welded of proper thickness and length—shipped as a unit. Fasten at floor and ceiling in same manner as channel studs for solid partitions. Plenty of room for pipes and conduits. Lath both sides.

The Shurebond Unit System of Concrete Joists

A combination of rigid corrugated metal tile and lath bottom units for forming joists for long span concrete slab construction. Upon stripping wood forms, ceilings ready to plaster. Unlimited length of spans obtainable. Also available for two-way joists. Easily installed. True uniform joists with lath bottoms integrally and continuously bonded thereto, results.

Plastoform

Line wood forms with this material before pouring concrete. Be assured of a mechanical bond for plaster. No guesswork; positive. In heavier weights acts as a form eliminating wood sheeting. Illustration 1½ in.; also furnished in 1 or 2 in.



Other Products and Specialties

Removable Metal Forms for concrete joists; Roof Deck; Inserts for attaching and hanging ceilings, also for furring all types of masonry surfaces. All types Base Screeds, Corner Beads, Picture Mould, etc. Ribbed Sheet or Expanded Lath—all types. Metal Door Bucks for attaching wood trim. Sleeper Clips for attaching wood floors to concrete.

Further literature upon request.

JOHNS-MANVILLE

EXECUTIVE OFFICES
22 East 40th Street, NEW YORK, N. Y.

Member of The Producers' Council, Inc.

Products

J-M STEELTEX for PLASTER, STUCCO and BRICK or STONE VENEER. *(Other Steeltex products will be found in our catalog in the Concrete Reinforcement section of this edition.)*

For the following Johns-Manville products, see File Index: Acoustical Treatment and Sound Isolation; Asbestos and Asphalt Shingles; Built-up Roofs; Insulated Roofs; Transite, Corrugated and Flat; Home Insulation; Insulating Board and Insulating Lath; Pipe Coverings and Insulations; Tile Flooring; Asbestos Wainscoting and Flexboard.

J-M STEELTEX

For Plaster—For Stucco—For Brick or Stone Veneer

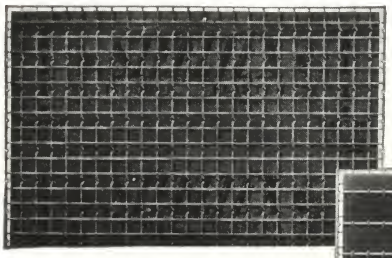
To provide a better method of reinforcing plastic building materials, Johns-Manville offers Steeltex, in styles for interior or exterior application. The use of Steeltex does not involve a single change in building methods and is no more costly than the less satisfactory materials formerly employed. Many years of service have proved its structural value, fire-resisting qualities, durability, and economy and speed in erection.

J-M STEELTEX FOR PLASTER

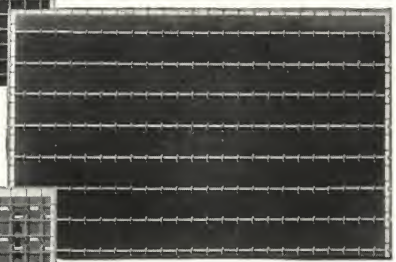
Steeltex for Plaster combines two functions in a single material. The reinforcing element consists of a network of 16-gauge cold-drawn galvanized copper-bearing steel wires welded on 2-in. centers. This square mesh or fabric becomes automatically embedded in the plaster, giving effective reinforcement at all points, distributing strains equally in all directions and reducing plaster cracking hazards to a minimum.

Combined integrally with the welded wire reinforcing fabric is a fibrous absorbent backing, to which the mortar is instantly bonded and firmly adheres during the curing process. As the plaster sets, both the backing and wire fabric become an integral part of the plaster slab, resulting in a one-piece steel-reinforced construction exactly like reinforced concrete in principle.

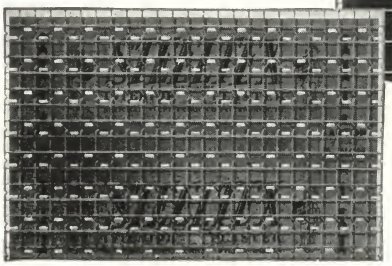
Steeltex for Plaster
Steeltex for plaster gives effective reinforcement, distributing strains equally and reducing plaster cracking hazard to the minimum



Left:
Plaster Side of Steeltex Sheet



Right:
Reverse Side of Steeltex Sheet



Left:
Plaster Side of Slotted Steeltex for Plaster
These slots facilitate wire-tying the lath to steel furring

Steeltex for Plaster is furnished in convenient sized sheets (30½x49 in. in size), which are nailed to the studs and then plastered in the regular way. The sheets have a board-like rigidity, which eliminates deflection or sag and insures rapid, easy application and maximum plaster coverage. Since all of the mortar functions in the slab, no plaster is wasted in the formation of "keys." In addition to these advantages, the rib stiffeners on the back of each Steeltex sheet also provide a furring action, which eliminates stud and joist marks in the finished plaster job.

Where it is desired to attach Steeltex direct to pencil rods, channel or other furring, the material is furnished with slotted openings in the fibrous backing which allow it to be tied with tie wires, in the same manner as metal lath. Although the slots are of ample size to insure easy tying, they are not large enough to waste mortar.

Underwriters' 1-Hour Fire Rating

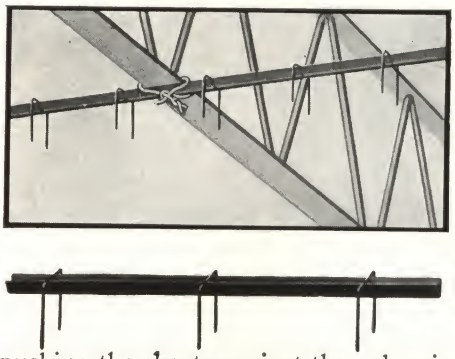
As a result of exhaustive tests conducted by the Underwriters' Laboratories, the material carries the desirable 1-hour fire rating, when partitions are lathed and plastered on two sides to ¾-in. grounds.

Adaptable to All Types of Work

Its ease of application and economy, combined with its structural advantages, adapt Steeltex to virtually all types of interior plaster work. It goes up rapidly on average work and is equally suited to cove or curved ceilings, corners, niches, arches and other unusual decorative shapes.

Steeltex Is Easily Attached to Steel Framing

Over standard steel framing, joists, etc., Steeltex for Plaster is applied by means of the Steeltex Attachment Bar. (Where the spacing of the steel framing is greater than 36 in. on centers, the ¾-in. Steeltex Channel is used.) The Attachment Bar is either tied or clipped to the steel members and the Steeltex is then applied by pushing the sheets against the galvanized wire prongs of the bar until these prongs puncture the Steeltex backing. They are then bent over to engage the reinforcing mesh, completing a fast and economical method of attachment to the steel framework.



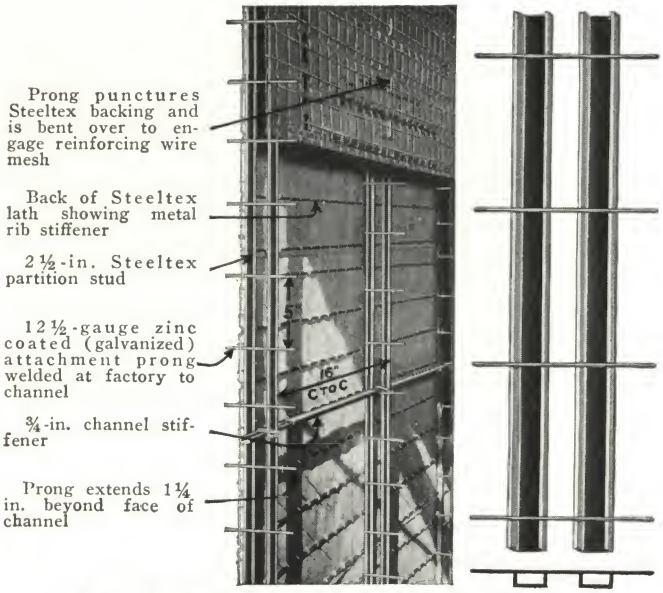
Steeltex Attachment Bar

For the open web type of joist, the attachment bar is saddle-tied with ordinary 18-gauge tie wires. This provides a rapid method of lath application over the steel framework. The U-shaped prongs are spot-welded to the bar every 4 inches

Steeltex Hollow Partitions

Hollow partitions are easily and economically erected with Steeltex, using the Steeltex Partition Stud illustrated below. Welded to the two channels of this stud at 5-in. intervals are galvanized wire prongs which puncture the Steeltex backing and are bent over to engage the reinforcing mesh and secure the sheets in place. Application of plaster to ¾-in. grounds on both faces forms a 4-in. partition which is light in weight, yet rigid, and unusually effective from the standpoint of sound deadening and acoustics.

Corners of such partitions are easily formed by bending the ribs of the Steeltex to the proper angle.

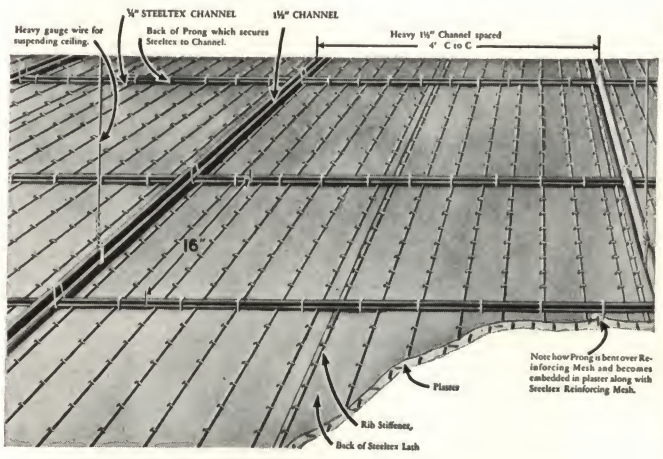


Detail Showing Construction of 4-in. Steeltex Partition

Using Steeltex for Plaster and the 2½-in. Steeltex Partition Stud which is formed of two ¾-in. channels, to which are electrically welded galvanized annealed wire prongs

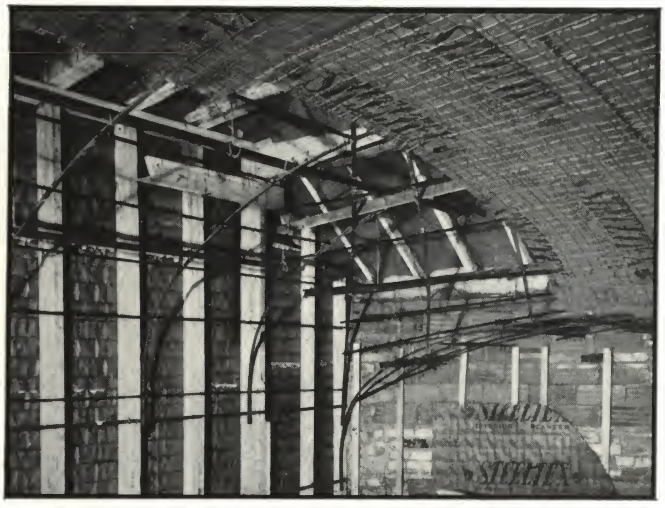
Steeltex for Suspended Ceilings

Complete suspended ceiling systems are also easily constructed with Steeltex, runner channels being first hung by heavy gauge wire the required distance from the floor slab. To these runner channels, ¾-in. Steeltex Channels, provided with prongs for attaching the Steeltex sheets, are then saddle-tied at right angles. In addition to its ease of erection and structural strength, this type of ceiling is light in weight and adaptable to any desired contour.



Steeltex Suspended Ceiling

Using 1½-in. runner channels and ¾-in. Steeltex channels. The prongs of the latter pass through the Steeltex backing and are bent over the reinforcing mesh, holding the sheets securely in place



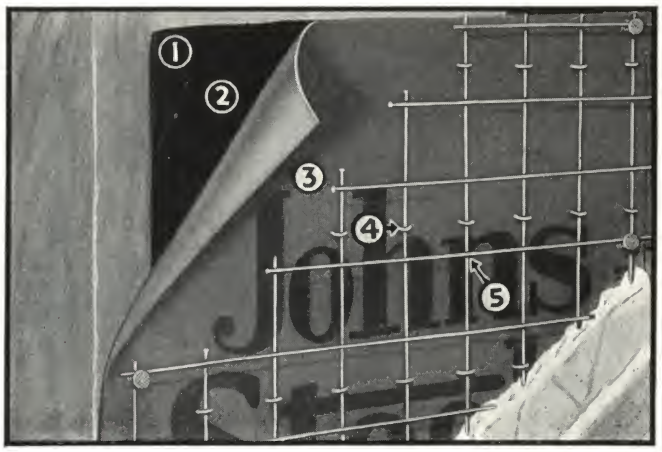
Adaptable to Unusual Contours

Steeltex for Plaster is readily adaptable to unusual contours and intersections such as this studio living room ceiling

J-M STEELTEX FOR STUCCO

More perhaps than any other plastic building material, portland cement stucco requires proper reinforcement. Without it, the low tensile strength of the stucco slab is inadequate to resist severe structural stresses, and cracking is almost certain to result.

The superiority of Steeltex for Stucco in providing this much needed reinforcement has been conclusively demonstrated in the Florida storms of 1926 and again at the time of the New Zealand earthquake, when many stucco buildings protected with Steeltex escaped with little or no damage, while nearby structures were practically demolished.



Diagrammatic Illustration of Built-up Wall Section with Steeltex for Stucco

1. Waterproof backing
2. Waterproof compound
3. Second fibrous backing
4. Furring device
5. Reinforcing fabric

Steeltex for Stucco derives its reinforcing effectiveness from a network of heavy galvanized copper-bearing steel wire fabric as in Steeltex for Plaster, except that the wire is 14 instead of 16-gauge and the waterproof membrane backing is composed of a double layer of tough fibrous backing, with the layers cemented to each other and further waterproofed by a layer of waterproof mastic compound between. The backing is fastened to the reinforcing wires by crimped stitch wires which let it fall away from the steel reinforcement ⅜ in., thus insuring the complete embedding of the steel wires in the stucco slab. The backing, in addition to providing a suitable base to receive and hold the wet mortar until it has set, furnishes a seal against moisture penetration and air-infiltration.

J-M Steeltex for Stucco is furnished in rolls 49 in. wide and 110½ ft. long, containing 50 square yards and weighing 140 lbs. per roll. Also supplied in sheets 49x52 in., shipped in bundles of 80 square yards (41 sheets) weighing 253 lbs. For the proper application of Steeltex for Stucco, the Steeltex Furring Nail is required. Approximately 15 nails are necessary per square yard of Steeltex.

For new construction, Steeltex for Stucco is nailed either direct to the studs or over sheathing. It is also admirably suited to the modernization of old homes by "overcoating" with stucco. The Steeltex is nailed directly over the old clapboard or shingled sidewalls and then stuccoed.

J-M STEELTEX FOR BRICK OR STONE VENEER (38-16)

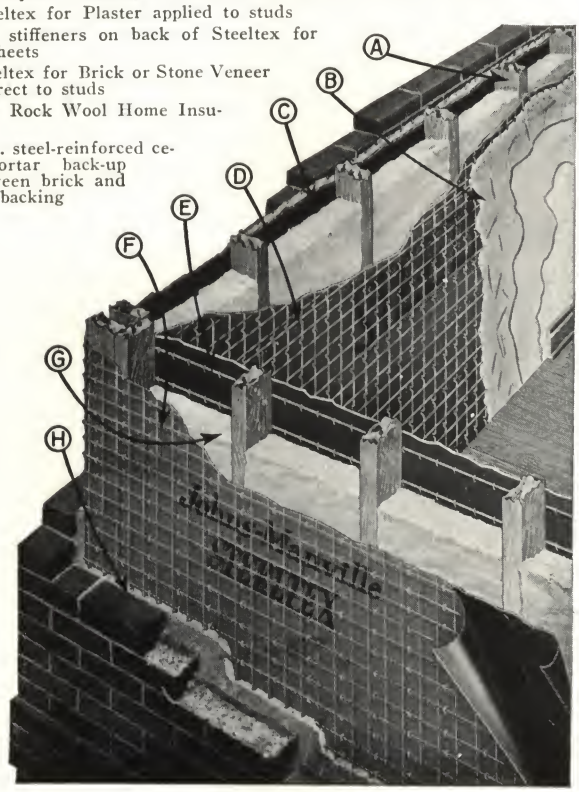
J-M Steeltex for Brick or Stone Veneer (38-16) is exactly like Steeltex for Stucco except that the galvanized steel reinforcing fabric is made of 16 instead of 14-gauge copper-bearing steel wire.

It is furnished in rolls 49 in. wide and 110½ ft. long, containing 50 square yards and weighing 107 lbs.

Construction of a brick or stone veneer wall with Steeltex requires no radical change in building methods. The Steeltex is first nailed direct to the wood studding, shingle fashion, as in the case of stucco construction. The brick or stone is then laid up approximately 1 in. from the framework. In place of the customary method of tying to the framework, however, this 1-in. space is filled in with bricklayer's cement-mortar as each course is laid. The mortar flows around the Steeltex reinforcing wires, completely embedding them.

The result is a monolithic slab of brick or stone and steel-reinforced cement-mortar, bonded together to impart elements of strength and stability not found in ordinary veneer construction, and thoroughly sealed against moisture penetration by the heavy waterproof Steeltex backing.

A. Wood studding, protected against fire on all four sides by J-M Rock Wool Home Insulation and steel-reinforced cement mortar and plaster
B. Interior plaster applied over Steeltex for Plaster
C. Waterproof backing of Steeltex for Brick or Stone Veneer
D. Steeltex for Plaster applied to studs
E. Rib stiffeners on back of Steeltex for Plaster sheets
F. Steeltex for Brick or Stone Veneer nailed direct to studs
G. J-M Rock Wool Home Insulation
H. 1-in. steel-reinforced cement mortar back-up slab between brick and Steeltex backing



A Structural Wall That Will Endure

At the right is shown an interesting example of how two Steeltex products—Steeltex for Brick or Stone Veneer and Steeltex for Plaster—supplemented by Johns-Manville Rock Wool Home Insulation between the studs, can be used to provide a wall of greater structural strength, comfort, fire-safety and water-tightness for modern home construction.

J-M STEELTEX SPECIFICATIONS

J-M STEELTEX FOR PLASTER

Complete individual specifications for any application of J-M Steeltex for Plaster may be had on request. For the convenience of the architect and others, the following short form specifications are here given.

1. Lathing Specification for Ceilings and Sidewalls Over Wood Framing

All interior walls, partitions and ceilings, where specified and designated plaster, shall be lathed with J-M Steeltex for Plaster (2x2-in. mesh, 16-gauge, cold-drawn, electrically-welded, galvanized copper-bearing steel wire, self-furring fabric, to which a tough, fibrous backing is secured by a 26-gauge V-shaped rib).

Steeltex for Plaster shall be attached to walls with 4d common wire or box nails, and to ceilings with 6d nails at each alternate rib into each stud or joist. All joints shall be staggered on both ceilings and sidewalls, so that four corners of adjacent sheets shall not occur at any one place. End laps shall be 1 in. and side laps ½ in. Lathing of ceiling shall start at a corner, bending the first sheet of Steeltex at the ceiling angle to make a 6-in. drop or apron down the sidewall. Sidewalls shall be lathed from ceiling down so that all horizontal laps are made over top sheets. Plaster shall be finished to not less than ⅝-in. grounds.

Note: In accordance with Board of Underwriters' requirements, partitions must be plastered on both faces to full ¾-in. thickness with gypsum plaster to afford one-hour fire protection.

2. Lathing Specification for Ceilings Under Steel Joists

J-M Steeltex for Plaster (2x2-in. mesh, 16-gauge, cold-drawn, electrically-welded, galvanized copper-bearing steel wire, self-furring fabric to which a tough, fibrous backing is secured by a 26-gauge V-shaped rib) shall be attached to steel joists with Steeltex V-shaped Attachment Bars or ¾-in. Steeltex Channels (19-gauge Attachment Bars where spacing of joists is less than 24 in.; 16-gauge Bars where spacing is 24 to 36 in.; ¾-in. Steeltex Channels where spacing is over 36 in.).

Attachment Bars or Channels shall be placed at right angles to the steel joists and attached to the flanges of rolled section joists with clips which hook over the flange of the beam and to the bottom chord of bar joists by tying with a double strand of 18-gauge galvanized annealed wire. In all cases, Attachment Bars or Channels shall be spaced not over 16 in. and so arranged that joints of the Steeltex sheets shall be made over the Attachment Bar or Channel and not between.

Steeltex for Plaster shall be applied with ribs at right angles to the Attachment Bars or Channels, starting at the corner of the ceiling and bending the first sheet at the ceiling angle to provide a 6-in. drop or apron down the sidewall. The Steeltex shall be secured to the Attachment Bars or Channels by pushing the lath against the prongs so that they puncture the backing and when the lath rests firmly against the Attachment Bar or Channel, bending the prongs over the reinforcing wires of the lath and pressing the ends in firmly.

Joints shall be staggered so that the four corners of adjacent sheets shall not occur at any one place. End laps shall be made over Attachment Bars or Channels only, and not between, and shall be 1 in. Side laps shall be ½ in.

3. Erecting and Lathing Specification for Suspended Ceilings

Plastered ceilings suspended from flat slab, arches, pan system, or other similar floor construction shall be constructed with J-M Steeltex for Plaster (2x2-in. mesh, 16-gauge, cold-drawn, electrically-welded, galvanized copper-bearing steel wire, self-furring fabric to which a tough fibrous backing is secured by a 26-gauge V-shaped rib) applied to Steeltex ¾-in. Channels. ¾-in. Steeltex Channels shall be spaced on 16-in. centers and tied with 18-gauge, galvanized annealed wire to 1½-in. runner channels, spaced on 4 to 5-ft. centers. Runner channels shall be suspended the required distance from the floor slab with heavy gauge, galvanized wire or with hanger straps.

Steeltex for Plaster shall be placed with ribs at right angles to ¾-in. Steeltex Channels and secured to ¾-in. Steeltex Channels by pushing the lath against the prongs so that they puncture the backing and, when the lath rests firmly against the ¾-in. Steeltex Channel, bending the prongs over the reinforcing wires of the lath and pressing the ends in firmly.

Joints shall be staggered so that four corners of adjacent sheets shall not occur at any one place. End laps shall be made on channels only, and not between, and shall be 1 in. Side laps shall be ½ in.

4. Erecting and Lathing Specification for 4-in. Steeltex Hollow Partitions

4-in. Steeltex Hollow Partitions shall be constructed with 2½-in. J-M Steeltex Studs (steel studs fabricated by joining together two lines of ¾-in. hot-rolled channels and welding 12½-gauge galvanized annealed wire across the legs at 5-in. intervals, the wires extending at least 1¼ in. from the channel and the stud having an over-all depth of 2½ in.). Steeltex Studs shall be spaced on 16-in. centers for partitions under 12 ft. high; on 12-in. centers for partitions 12 to 15 ft. high, and on 8-in. centers for partitions 15 to 20 ft. high.

¾-in. or 1-in. Channels, to act as stiffeners, shall be permanently wired horizontally between the studs on not less than 4-ft. centers and anchored at each end in the sidewalls. The 2½-in. J-M Steeltex Studs shall be secured to floor and ceiling bearings by runner channels, nailing, ceiling and floor brackets, or holes cut in concrete floor and in ceiling.

After the partition studs have been erected plumb and true, J-M Steeltex for Plaster (2x2-in. mesh, 16-gauge, cold-drawn, electrically-welded galvanized, copper-bearing steel wire, self-furring fabric to which a tough fibrous backing is secured by 26-gauge V-shaped rib) shall be attached to the studs by pushing the lath against the prongs so that they puncture the fibrous backing. When the lath rests firmly against the studs, the prongs shall be bent over the reinforcing wires of the lath and pressed in firmly.

J-M STEELTEX FOR STUCCO

5. Lathing Specification for Stucco Over Wood Framing

All exterior walls where specified and designated stucco shall be lathed with J-M Steeltex for Stucco (2x2-in. mesh, 14-gauge cold-drawn, electrically-welded, galvanized copper-bearing steel wire fabric, to which is secured a tough, double-layer fibrous backing with a mastic filler between the layers).

Steeltex for Stucco shall be applied direct to studs or sheathing as the case may be, or over siding in case of "overcoating," and nailed to bearings. Steeltex for Stucco shall be nailed over every stud horizontally across the building and every 6 in. vertically on the stud, placing Steeltex Furring Nails under wires. Steeltex for Stucco shall be toe-nailed at corner of mesh to stretch the fabric taut automatically.

The first width of Steeltex for Stucco shall be started at the sill line and extend around the building. The second width shall lap the first ¾ in. (shingle fashion), lapping wire to wire with no fibrous backing in between. Where vertical joints occur, the same method of lapping shall be employed, but laps shall be 1 in.

Steeltex for Stucco shall be carried up to the openings or under the moulding of all doors and windows. In no case shall vertical joints be joined at corners, under or over window or door openings, or between studs, where applied direct to studs, and in no case shall Steeltex for Stucco be butted, nor shall the backing extend over the face of the wire mesh at joints. Steeltex for Stucco in rolls is recommended, but when sheets are used they shall be placed so that all joints shall overlap the fabric ¾ in. with wire to wire, no backing between. In all cases, the stucco placed over Steeltex lath shall be not less than ¾-in. grounds.

J-M STEELTEX FOR BRICK OR STONE VENEER (38-16)

6. Specification for Sheathing Over Wood Framing

All exterior walls for brick or stone veneering over wood framing shall be sheathed with Steeltex for Brick or Stone Veneer (38-16) (2x2-in. mesh, cold-drawn, electrically-welded, galvanized copper-bearing steel wire fabric, to which is secured a tough, double-layer, fibrous backing with a mastic filler between the layers).

The first width of Steeltex 38-16 sheathing shall be started at the sill line and extend around the building. The second width shall lap the first ¾ in. (shingle fashion), lapping wire to wire with no fibrous backing in between. Where vertical joints occur, the same method of lapping shall be employed, but end laps shall be 1 in.

Steeltex 38-16 shall be nailed with galvanized nails at every third wire, or on 6-in. centers, to each stud and shall be securely nailed over every other wire, or on 4-in. centers, around all openings.

MANHATTAN TERRAZZO BRASS STRIP CO., INC.

1915 Park Avenue
NEW YORK, N. Y.

TELEPHONE
HArlem 7-6656

DISTRIBUTED NATIONALLY BY KNAPP BROS. MFG. CO., JOLIET, ILL.

For Manhattan Metal Strips for Terrazzo, Cement and Composition Flooring, see File Index

MANHATTAN FLUSH TYPE BASE BEAD

A New Type—Patented June 13, 1933

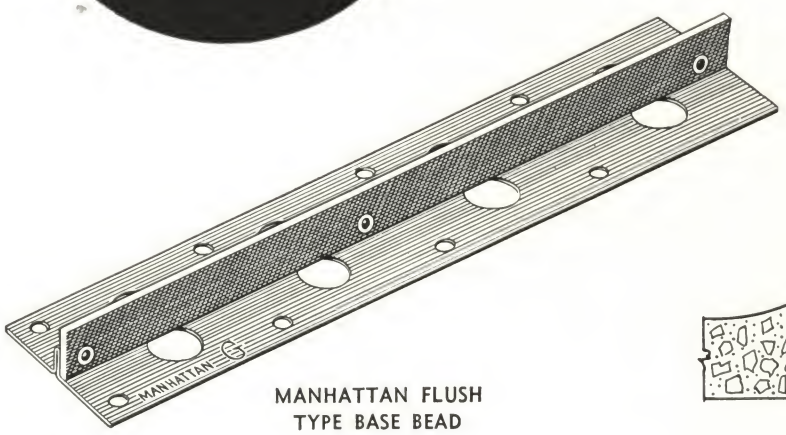
To meet the demand for a non-corrosive base bead, we have produced, after considerable experimentation, the base bead illustrated on this page. The bottom member is made of galvanized metal in "T" shape and to the leg of this member we fasten strips of brass, white alloy, or any other non-corrosive metal that may be specified, of any thickness from 16-gauge to ¼-inch.

This enables the architect to specify a base bead to conform to any width of strip used in the installation of terrazzo floors. Its additional cost over the galvanized metal type of base bead is more than offset by its ease of application and the satisfactory results obtained.

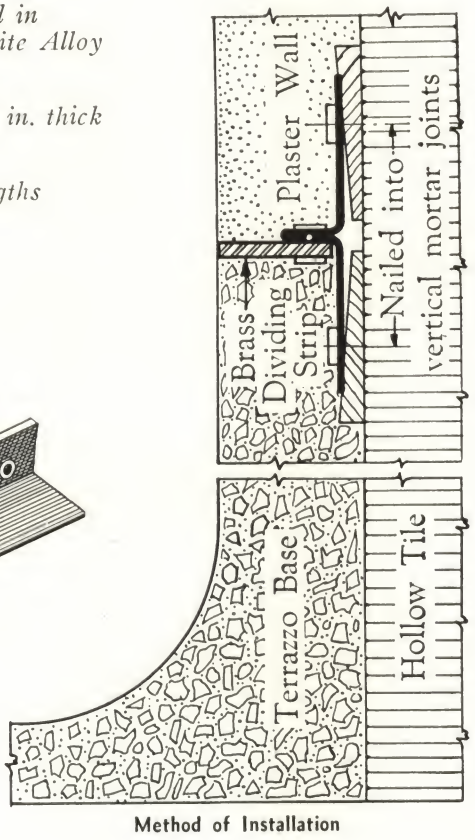
Furnished in
Brass and White Alloy

16-gauge to ¼ in. thick

10-ft. lengths



MANHATTAN FLUSH
TYPE BASE BEAD



Method of Installation

A sample of the Manhattan Flush Type Base Bead furnished on request

KNAPP BROTHERS MANUFACTURING COMPANY

Manufacturers of Metal Building Specialties and Sanitary Metal Trim

220 Scott Street, JOLIET, ILL.

Knapp Specialties are distributed exclusively through licensed representatives located in principal cities.

Knapp Staples are distributed through building material dealers.

KNAPP METAL PRODUCTS

Specialties

- Window Trim and Stools.
- Stop Mouldings.
- Base Boards.
- Cove Mouldings.
- Special Plastered-in Casings.
- Applied Casings.
- Blackboard Trim.
- Chalk Trough.
- Inserts and Pans.
- Map Rail.
- Applied Picture Moulding.
- Heavy Duty Picture Moulding.
- Chair Rails.
- Dado Moulding.
- Access Panels.
- Corner Guards.
- Wyr-Way Base System.

Staples

- Small Nose Corner Beads.
- Bull Nose Corner Beads.
- Reinforced Bull Nose Corner Beads.
- Inner Angle Corners and Coves.
- Staple "Plastered-in" Flush Casings.
- "Plastered-in" Picture Mouldings.
- Base Grounds.
- Base Screeds.
- Terrazzo Base Grounds.
- Diamond Mesh Lath.
- Herringbone Lath.
- Flat Rib Lath.
- 3/8" Rib Lath.
- 3/4" Rib Lath.
- Stripite.
- Cornerite.
- Furring Channels, etc.

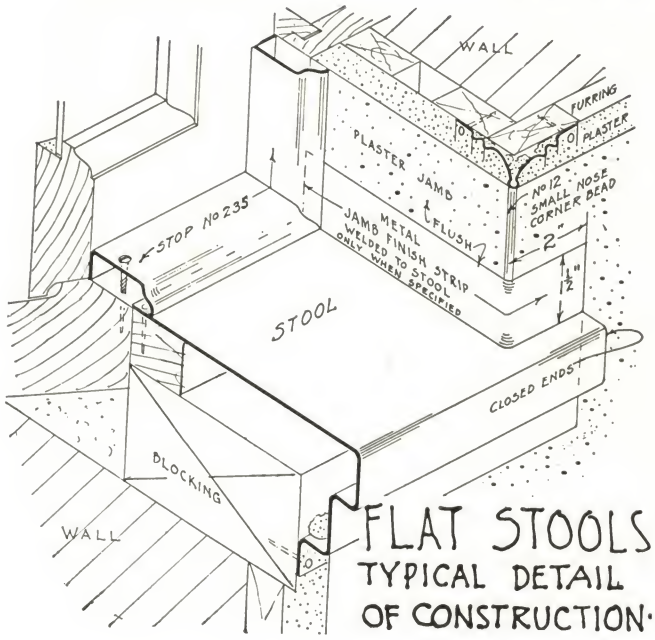
THE COMPANY

Knapp Brothers Manufacturing Company developed and pioneered the use of the metal corner bead. In due course, then followed such items as base grounds and screeds, hump clips, and Knapp Plastered-in Casings. Each of these items contributed greatly to the improvement of the plastering industry.

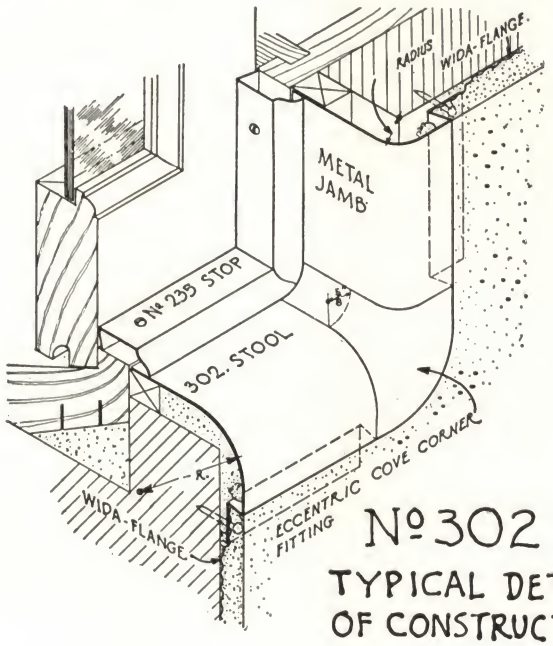
In line with this pioneering spirit Knapp developed and pioneered "Sanitary Metal Trim." The late George A. Knapp, an architect before he entered the manufacturing field, visualized a new use of metal for trimming buildings in a sanitary, permanent and fireproof manner. Knapp Sanitary Metal Base Boards, Window Stools and Trim, Casings, Blackboard Trim, etc., were one by one perfected and put on the market.

Knapp Brothers Manufacturing Company continue to lead in this field.

WINDOW TRIM



FLAT STOOLS
TYPICAL DETAIL
OF CONSTRUCTION.



No 302
TYPICAL DETAIL
OF CONSTRUCTION.

No. 302 Sanitary Trim

The Knapp *Number 302* designates a style of sanitary metal window trim, (heads, jambs, and stools), which provides a flush finish with the wall plastering and has a rounded or bull nose corner.

No. 302 trim may be used for the stool alone, in which case Knapp Sanitary end fittings are attached in the factory. These fittings member with Knapp bull nose corner beads, thus permitting the use of plaster jamb and head reveals. It is available in either ¾ in. or 1½ in. radius nose, and following assemblies:

(a) K. D. (knocked down) assembly in which Knapp sanitary coved fittings are attached in the factory to heads and stools and jambs are fitted, bolted and knocked down for shipment.

(b) S. U. (set up) assembly in which Knapp sanitary fittings are attached to heads, stools and jambs in the factory and the completed unit is shipped to the job.

(c) M & W (mitred and welded) assembly in which head, jambs and stools are mitred and welded in the factory and the completed unit is shipped to the job.

No. 302 may also be used on jambs and heads in combination with flat stools, No. 304, 306, 307 and 308, in which case it is customary to assemble the heads and jambs (either K. D. or S. U.) and deliver the stools separately.

Flat Stools

The illustration at the left shows the construction of Flat stools, which includes Nos. 304, 306, 307 and 308.

The jamb finish strip shown in the detail is furnished *only when specified.* When specified it will be made to match the Knapp small nose or bull nose bead specified. The *Jamb finish strip* provides a straight true line for the plaster jambs and effectively protects the joint between the metal stool and plaster jambs from damage and disintegration.

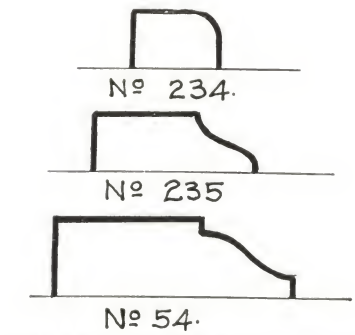
Apron members (Knapp 210) are available for stools Nos. 306 and 308.

Splayed Stools

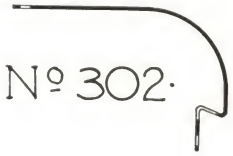
Knapp No. 305, is made in 20, 18, 16 and 14 gauges. Sanitary corner fittings are available in thirty degree bevel for following combinations. Splayed stools with end fittings and plaster jambs; splayed stools with flat jambs and splayed or flat heads; flat heads and stools with splayed jambs. These are available in both K. D. and S. U. assembly. Where mitre and weld, S. U. assembly is required all sides may be splayed and the degree of bevel is variable.

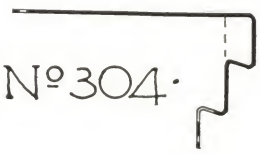
Wida Flange

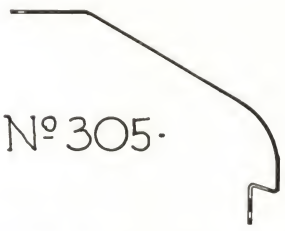
Knapp "Wida Flange" is made from 20 gauge steel sheets perforated with about eight holes per square inch, crimped and welded to the plaster flange. This is the most effective plaster bond available. Wida flange is furnished when specified.

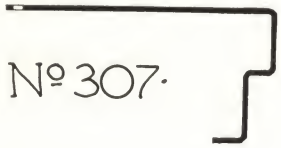


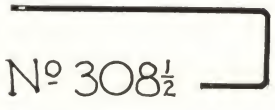
·KNAPP STOP MOULDINGS·



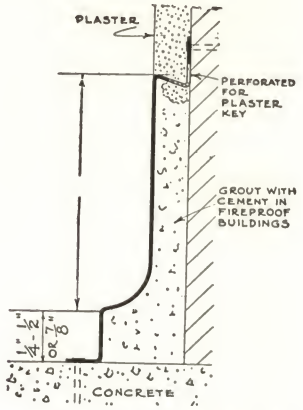








KNAPP STOOLS AND WINDOW TRIM ARE CUSTOM MADE FOR SPECIFIC JOBS THEY ARE FABRICATED TO CONFORM TO JOB CONDITIONS.



-TYPICAL DETAIL- "PLASTERED-IN" SELF-GROUNDING TYPE BASES.

Knapp Metal Base Boards

There are four general types of Metal Base Boards made by Knapp.

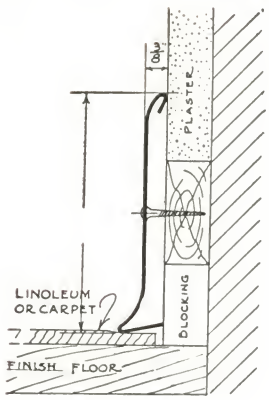
(a) One member "plastered-in" self-grounding type Nos. 200, 201, 202, 206, 207 and 501.

(b) Two member "plastered in" self grounding No. 205.

(c) One member applied type Nos. 203, 209, 210, 211 and 212.

(d) Two member applied type No. 204.

The detail drawings shown, illustrate the general principles involved in erecting both the "plastered-in" self grounding types and the applied types of base boards.



TYPICAL DETAIL· APPLIED TYPE BASES·

"Plastered-In" Self-Grounding Base Boards

The "plastered-in" self-grounding base boards are erected before the plastering is started. They may be applied to any type of rough construction, viz.: masonry of various kinds, wood or metal studding; wood, metal or rock lath. The shape of the bottom of the base may be varied to meet the special requirements of the floor requirements and may be used with all kinds of trowelled and applied floors, such as cement, terrazzo, composition, mastic, asphalt, tile, rubber tile, vitreous tile, marble, etc.

All "plastered-in" base boards have the Knapp "Plaster Flange" formed at the top. This flange permits concealed fastening to the rough construction; provides a straight true plastering screed line; is perforated for grouting and for plaster key.

Knapp "plastered-in" bases may be used without grouting, however the small extra expense of grouting is usually justified. The large grouting slots in the flange simplify this operation.

The two member "plastered-in" base board is recommended for use with wood floors and in remodeling work where it is necessary to adjust the base to an old floor line. The shape of the bottom cove is such that it adjusts itself to inequalities in the flooring at the time of laying as well as compensating for movements, due to swelling and shrinking of the wood flooring as well as minor settlement of the structure.

No wood grounds are required for the erection of base boards Nos. 200, 202, 205, 206 and 501. One ground is required for Nos. 201 and 207 to permit face screwing the bottom of the base.

Applied Base Boards

These base boards are applied after plastering. It is necessary that wood grounds be provided to which they are attached. The base boards are attached through the face of the base with countersunk overall head screws, which are furnished with the base.

Base Fittings

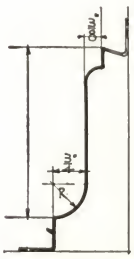
Neat, flush, sanitary corner fittings and end stops are available for all types of metal base boards requiring fittings. These fittings are of the finest quality cast iron and are made to fit the contours of Knapp small nose corner beads; Knapp ¾-in. radius and 1½-in. radius bull nose corner beads for external corners; Knapp inner angle square bead and Knapp inner angle ¾-in. and 1½-in. coves. Stamped metal over-lapping fittings and end stops are available for bases 210, 211 and 212 at less expense than the flush cast fittings.

General Note

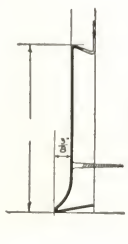
All metal base boards are available in 20 and 18 gauge, and made from tight coat galvanized steel. All base boards are primed with metal preservative paint especially prepared for use on galvanized metal. Only best quality painting materials are used and all priming is applied and *air dried* in our plant.

Base Coves

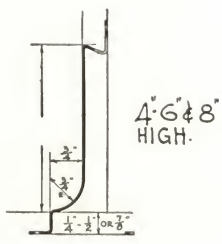
Knapp base coves, Nos. 43, 204 cove and 205 cove may be used with other materials. Corner fittings and end stops are available.



Nº 200



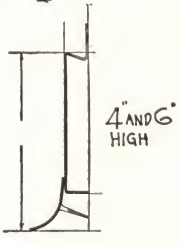
Nº 201·



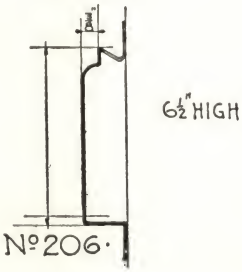
Nº 202

Nº 203·

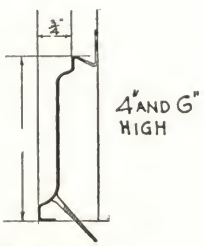
Nº 204·



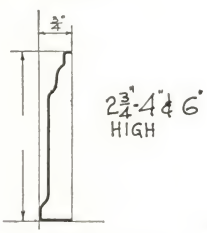
Nº 205 ½·



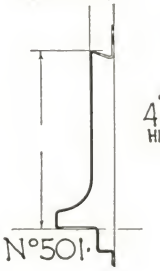
Nº 206·



Nº 207·



Nº 210-211-212·



Nº 501·

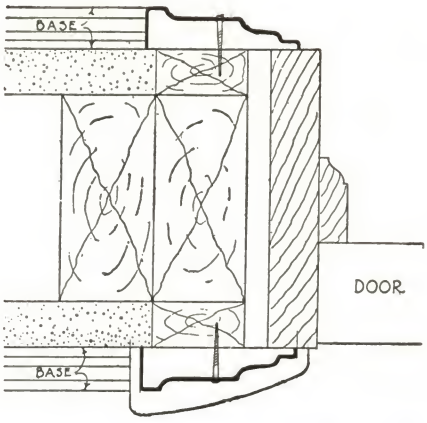
KNAPP CASINGS

There are two general types of casings made by Knapp.
(a) The "plastered-in," self-grounding type.
(b) Applied (after plastering) type.

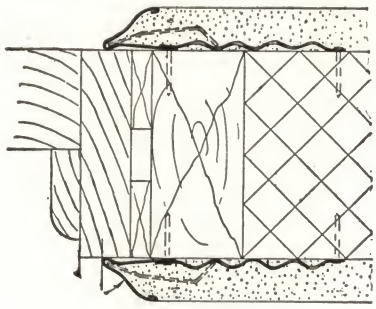
The "plastered-in" self-grounding types are erected before the plastering is started. These casings provide a most effective plaster stop as well as a neat sanitary casing for doors, windows, cased openings, skylights, ventilators, etc. They are suitable for use in all types of buildings where the maximum of sanitation and ease of maintenance and house-keeping is a factor. This construction harmonizes with *"Modern Design."*

All "plastered-in" casings are manufactured for ½ in., ⅝ in. or ¾ in. plaster. They are available in stock lengths of 6′ 0″, 7′ 0″, 7′ 4″, 8′ 0″, 9′ 0″, 10′ 0″ and 12′ 0″. These sections may be cut and mitred at the job, by the erector, or when so specified, they may be mitred and welded in the factory and delivered in complete "set up" units.

The applied casings are erected after the plastering has been completed. They are attached to wood grounds with oval head, countersunk screws. It is desirable that this type of casing be mitred and welded in the factory and delivered in complete set up units.



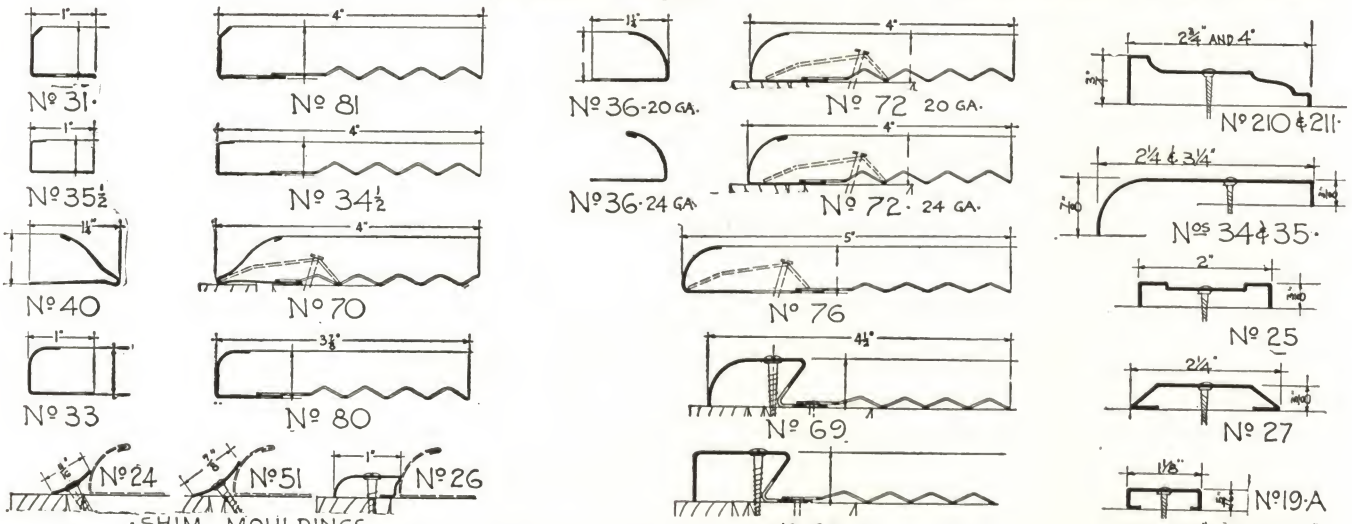
TYPICAL CONSTRUCTION DETAIL
"APPLIED" CASINGS.



TYPICAL CONSTRUCTION DETAIL
"PLASTERED-IN" CASINGS.

Painting

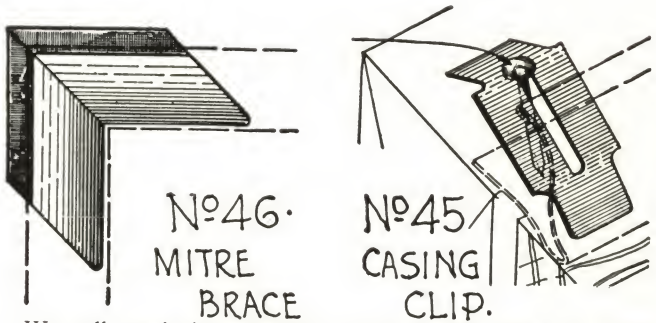
All Knapp casings are primed with metal preservative paint especially prepared for use on galvanized metal and *air dried* in our plant.



SHIM MOULDINGS.

KNAPP "PLASTERED-IN" CASINGS.

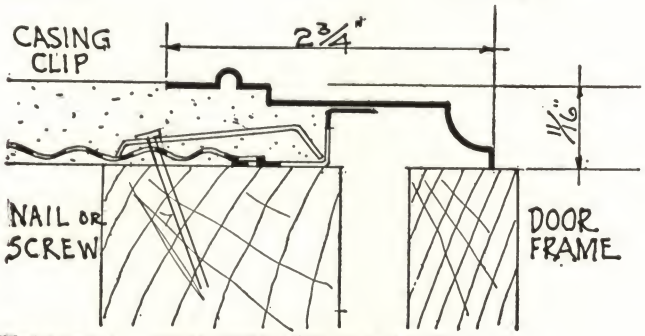
KNAPP "APPLIED" CASINGS.



We call particular attention to the Knapp cast iron mitre braces. These braces are designed to support the mitred corners in exact alignment.

Knapp casing clips are designed to hold the casing "nose" in constant spring contact with the finished jamb of the opening.

The mitre braces and casing clips are furnished when specified.



TYPICAL CONSTRUCTION DETAIL.
Nº83 "PLASTERED-IN" CASING.

This is a new Knapp development. It provides all the features of a "plastered-in" flush casing and at the same time provides an attractive architrave for framing the openings. The combination of wood door frames and No. 83 flush metal casing has many advantages over either all wood or all metal frames. No. 83 casing is furnished mitred and welded in our plant and delivered in completed units ready to erect.

KNAPP METAL BLACKBOARD TRIM

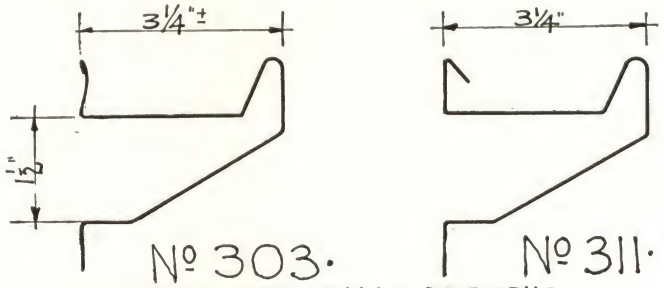
We make the most complete line of blackboard trim and chalk troughs available. This consists of our regular line of "applied" troughs and trim, and our "plastered-in" self-grounding, factory-fabricated unit.

Applied Type

The "applied" types of chalk troughs and trim are erected after the plastering is completed. They are attached to wood grounds with oval head countersunk screws. The typical Detail of Construction illustrates a standard installation of this type of finish.

Chalk Troughs

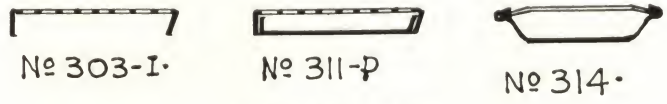
Knapp standard troughs are made from 22 gauge tight coat galvanized steel; they are No. 303 and No. 311. The number 311 has the top flange turned out to provide a dust deflector; No. 303 is a little lower priced. Stock lengths are 6′ 0″, 8′ 0″ and 10′ 0″. Standard end stops are available. (See sketches.)



STANDARD CHALK TROUGHS

Inserts and Dust Pans

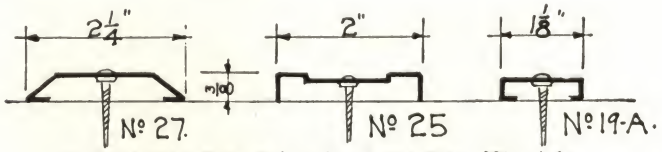
Chalk troughs may be used without either insert or dust pans. We have available our No. 303-I perforated metal insert which will fit either the No. 303 or the No. 311 trough; our No. 311-P dust pan, which has a flat perforated cover or our No. 314 dust pan, which has a slotted removable cover. Stock lengths of inserts and pans are 3′ 0″, 4′ 0″ and 5′ 0″.



Blackboard Trim

Nos. 25 and 27 are available in 10′ 0″ stock length. These sections may be used with our standard chalk trough. We have a complete line of cast iron flush corner fittings consisting of 90° corners, tees and crosses. Knapp map rail may be used with either of these sections.

No. 19-A provides a simple effective finish where heavier trim members are not desired. This number must be mitered at the job as no fittings are available. It is desirable to specify a metal ground for this item as its narrow face will not permit the use of an effective wood ground. This trim harmonizes nicely with Knapp map rail.

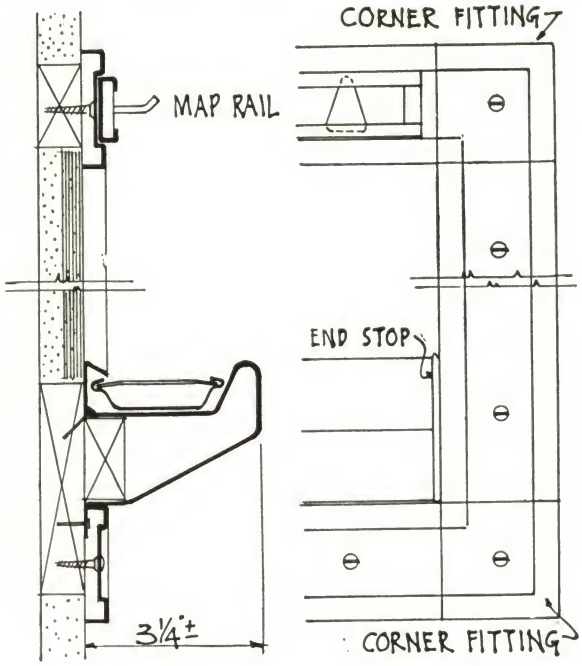


STANDARD BLACKBOARD TRIM.

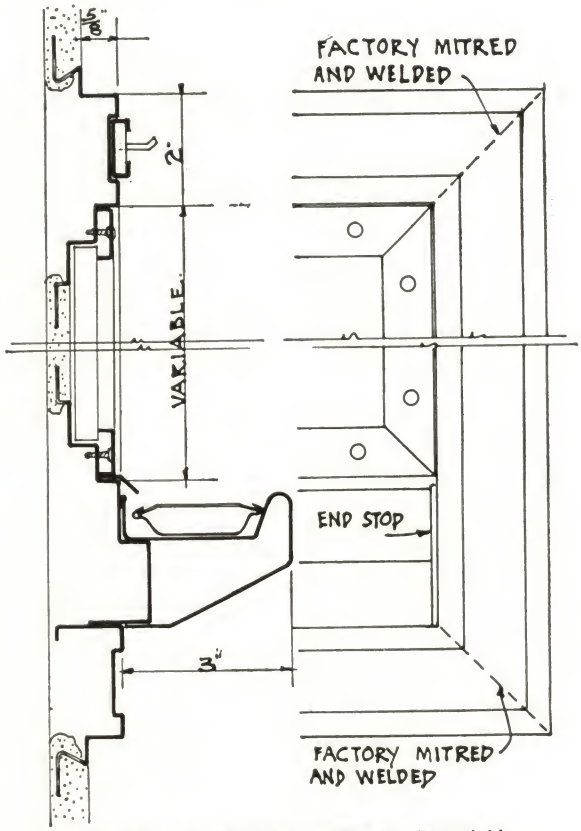
"Plastered-In" Type

The Knapp No. 313 "plastered-in" and self-grounding unit is erected before the plastering is started. It is factory assembled to predetermined sizes. Corners are mitered and welded and ground smooth. The chalk trough and stop mouldings are cut to length or mitered, punched and countersunk and shipped separate to be applied after the plastering and blackboard installations have been completed.

This design assures a straight true installation; it provides screed lines for the plasterers' work and a positive seat and support for the slate blackboard.



TYPICAL CONSTRUCTION DETAIL
"APPLIED" BLACKBOARD TRIM.



TYPICAL CONSTRUCTION DETAIL.
"PLASTERED-IN" - № 313 -
BLACKBOARD TRIM.

KNAPP CORNER BEADS

Corner Bead

We manufacture *Solid Wing Corner Bead.* There is available a design to meet every structural condition. See illustrations showing types available.

The solid wing bead is preferred by leading plasterers as it assures a straight solid corner. All beads are available in 24 and 26 gauge, formed from tight coat galvanized steel sheets. Beads are also available in brass, zinc, and copper on application. All bull nose beads are available with reinforced nose.

Table of Bead Sizes

Small Nose Beads

No.	Wing Dimension
000	1¼ in.
8	1½ in.
15½	1¾ in. scalloped
12	2 in.
16	2½ in. scalloped

Bull Nose Beads

No.	Radius	Wing Dimension
604	¾ in.	1½ in.
14½	¾ in.	1¾ in.
14	¾ in.	2½ in.
607	1½ in.	1⅝ in.
603	1½ in.	2⅞ in.

Base Screeds

These are formed to provide metal edging for cement or other troweled bases. No. 49 has about ⅜ in. exposed metal; No. 42 has about ⅞ in. exposed metal. Both screeds have ⅜ in. projection from face of plaster.

Complete line of cast iron corners and end stops are available for both No. 42 and No. 49.

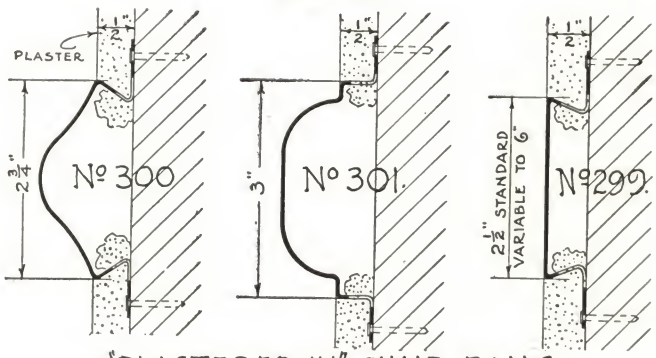
Base Grounds

All base grounds are available in ½ in., ⅝ in. and ¾ in. depth. No. 1 is standard base ground and separator; No. 2 is wide nose, scalloped wing; and No. 3 is wide nose, but without the scallops.

Terrazzo Ground

Knapp No. 1-B has either zinc or brass nose and is available in ½ in., ⅝ in. or ¾ in. depth. This section permits grinding the nose to the terrazzo without destroying the structure of the ground.

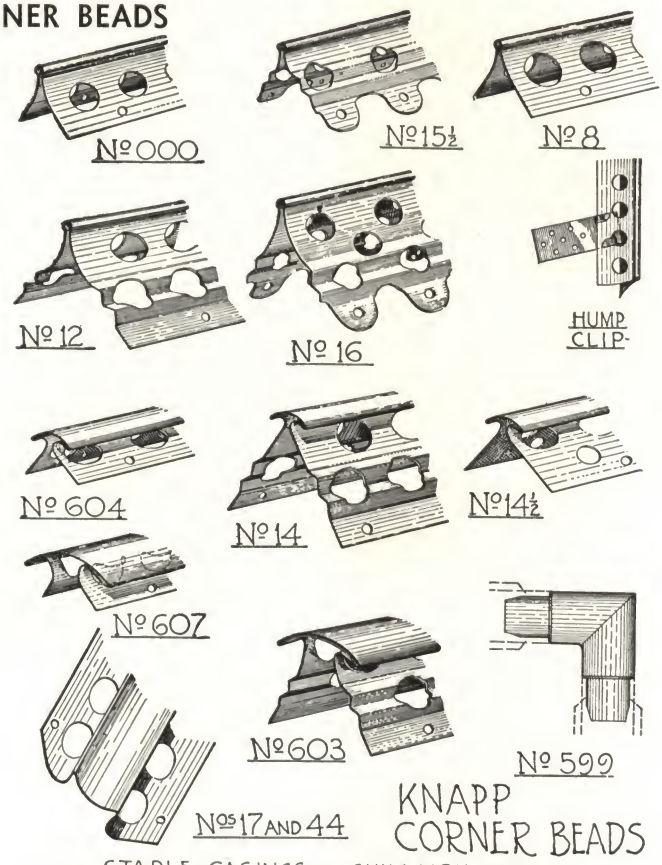
Chair Rails



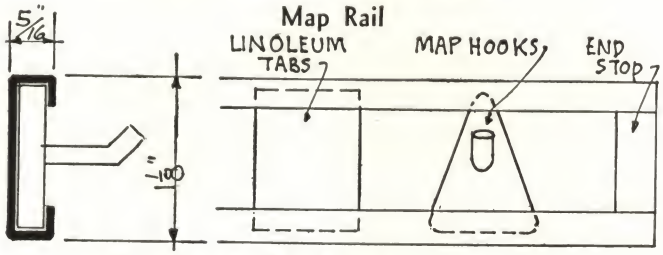
"PLASTERED-IN" CHAIR RAILS.

The above "plastered-in" chair rails or guard rails are available in 10′ 0″ stock lengths. Flush cast iron corner fittings and end stops are available for Nos. 300 and 301.

Several applied trim sections may be used as chair rails or dado mouldings; viz., Nos. 25, 27, 210 and 211, as there are available flush cast iron fittings and end stops.



Map Rail

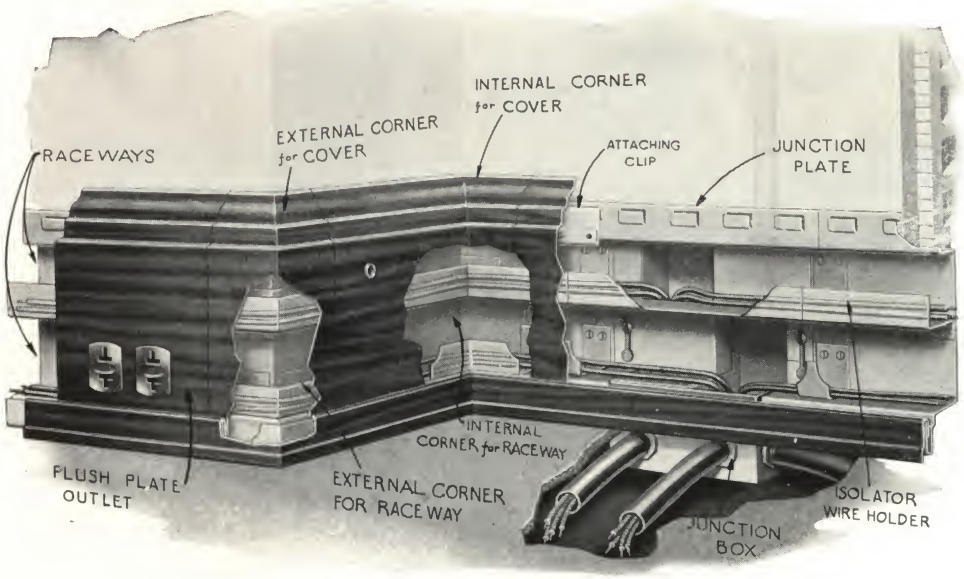


Nº 19 - MAP RAIL.

Knapp No. 19 is furnished with the following standard equipment; one hook for each two lin. ft. rail; two linoleum tabs for each lin. ft. of rail; and 2 end stops for each stock length of rail. Stock lengths, 6′, 8′ and 10′. Hooks are adjustable and removable.

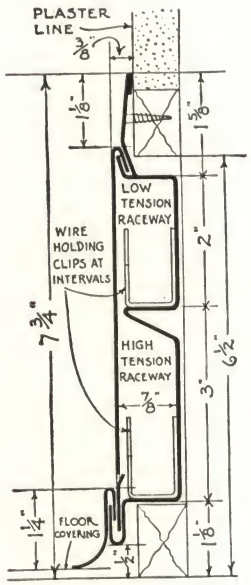
This rail will fit Knapp blackboard trim and may also be used with wood or other trim items.

WYR-WAY BASE BRANCH CIRCUIT DISTRIBUTION SYSTEM

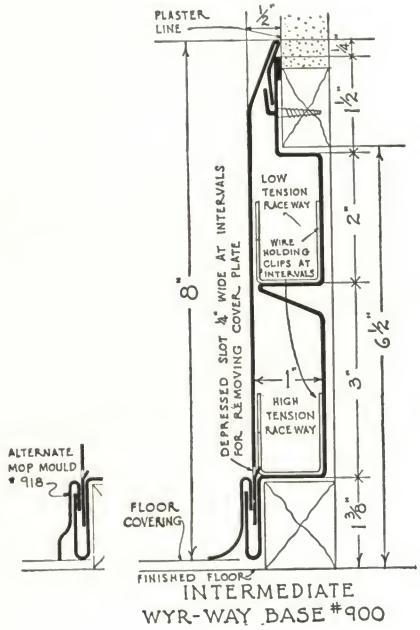


Wyr-Way Base Series No. 1100

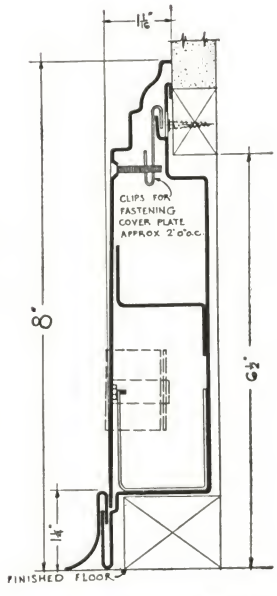
(All Wyr-Way Inspected and Labeled by Underwriters' Laboratories, Inc.) Manufactured under license on patents for Conduo-Base issued Nov. 28, 1922, and December 21, 1926.



STANDARD WYR-WAY BASE #800



INTERMEDIATE WYR-WAY BASE #900



WYR-WAY BASE #1100

General Description and Explanation

Wyr-Way Base consists of two wire-carrying raceways with an easily removable cover plate concealing them. The upper raceway is designed to carry low tension wires, such as telephone, signal circuits, telegraph wires, etc. The lower raceway is designed to carry high tension wires for all lighting or power appliance requirements. The wires are laid in the raceways directly and do not have to be installed in conduits. The cover is easily removable when needed and is in no sense a loose cover.

Junction boxes of types depending on local requirements are provided so that the circuits may be conveniently brought to the raceways. Cast iron corner fittings for the raceways are provided to eliminate the necessity for mitering at corners. Flush plates prepared for convenience outlets are provided so that they may be inserted at any point in the base for present or future outlets. The low tension outlets may be obtained by drilling a hole anywhere in the cover plate in front of the upper raceway.

A floor member is provided so as to complete the artistic effect of the base and give a sanitary finish at the floor line.

Wyr-Way catalogue, specifications, and list of buildings in which Wyr-Way has been used, will be sent upon request. The service of our experienced Electrical Engineers are at your disposal for the study of electrical wiring problems.

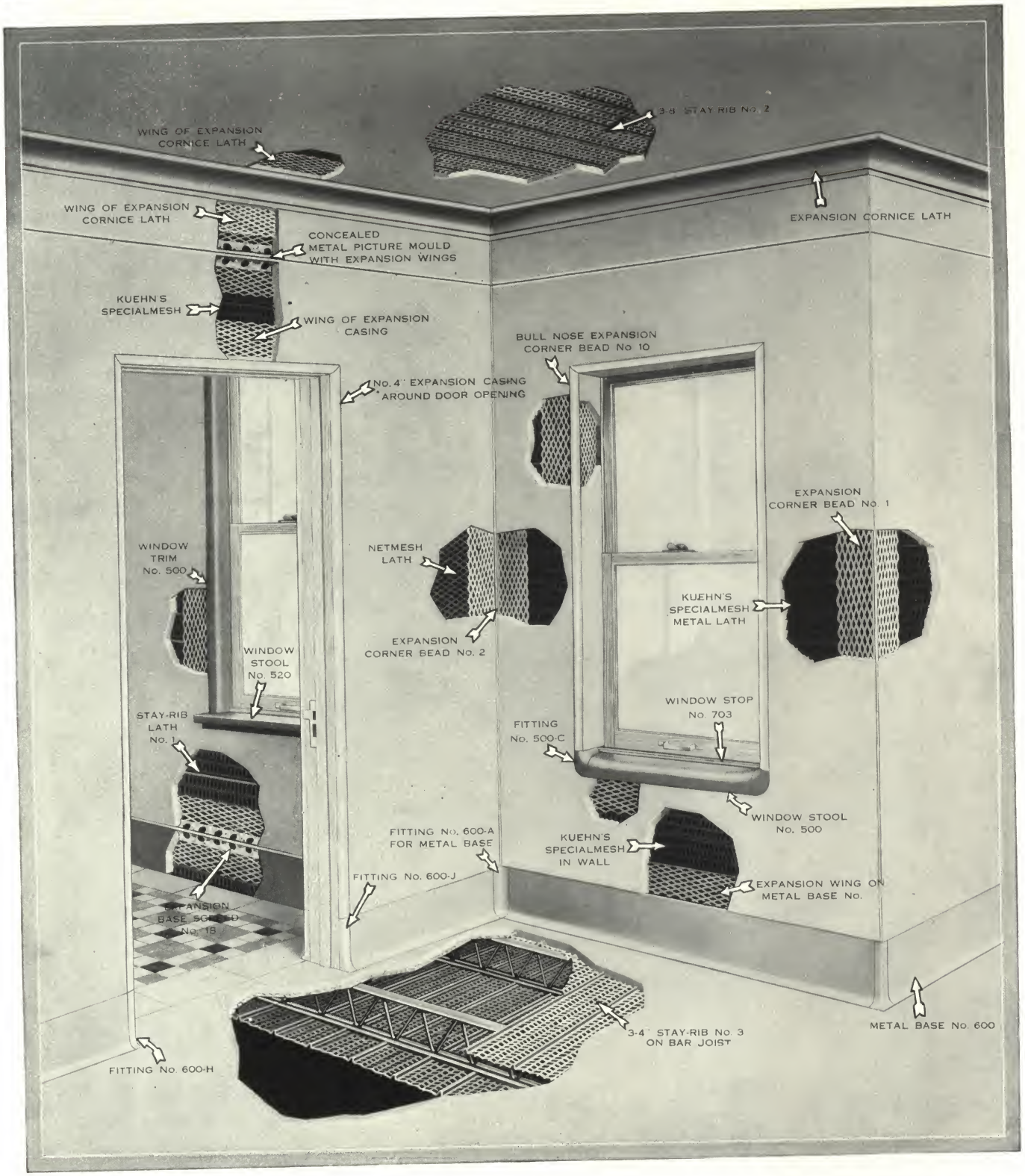
Wyr-Way is made with single, double and triple raceways to meet any and all wiring requirements.

MEMORANDA

MILCOR MANUAL

FIREPROOF BUILDING PRODUCTS

•• MILCOR STEEL COMPANY ••



Milcor fireproof construction, as illustrated here, makes walls so strong, corners, doorways and arches so firmly united that every part of the building is held together as a unit and consequently no settling cracks can appear. Everything considered, there is no other plaster base that has all the advantages of Metal Lath, and no other Metal Trim or Corner Bead that can equal the superior building qualities of Milcor Expansion products. The illustration shows a typical interior embodying all types of Milcor Metal Lath, Expansion Corner Bead, Casing, Window Stools, Metal Base and accessory products. By referring to the illustration, one may understand more clearly how many of the fireproof construction materials, shown on the following pages, may be used to advantage.

Plastering is one of the most important factors in the construction of any building. Milcor Metal Lath and allied products insure fire-safeness, freedom from dust streaks, elimination of plaster cracks and the most enduring and satisfactory construction available.

MILCOR STEEL COMPANY

Send Inquiries to So. 41st & W. Burnham Sts., Milwaukee, Wis.

MILWAUKEE, WIS. CANTON, OHIO

CHICAGO, ILL. KANSAS CITY, MO. LA CROSSE, WIS.

METAL LATH AND ACCESSORIES METAL CASINGS, TRIM, BASES, ETC.

The Company

The Milcor Steel Company is the foremost national manufacturer of "Firesafe" sheet metal products, largely consumed by the building industry. Constant improvement in design, materials, workmanship, and methods of production has marked the company's progress, until today Milcor Products are accepted nationally as standards of quality.

Diversified Line of Products

In addition to the line of Metal Lath, Plastering Accessories and Metal Trim, including Casings, Stools, Metal Bases, etc., described in this catalogue, the Milcor Steel Company is among the largest manufacturers making a complete line of Metal building products.

Manufacturing and Distributing Facilities

The Milcor Steel Company's plants consist of over a million (1,000,000) square feet of floor space and its properties cover forty (40) acres of land. In addition to its main comparatively new plants in Milwaukee, Wisconsin, and Canton, Ohio, equipped with modern machines, there are plants in Chicago, Illinois, Kansas City, Missouri, and La Crosse, Wisconsin. Sales offices are maintained in all principal centers.

Catalogues Available

(Size 8½x11 inches to fit filing cabinet.)

No. 20-F "The Milcor Manual"—a complete catalogue on Metal Lath and allied products, including standard architectural specifications for Firesafe construction.

No. 24-A "Milcor Architectural Sheet Metal Guide"—a complete catalogue on Roofing, Cornices, Architectural Ornaments, Ventilators, Skylights, etc.

No. 28 "Milcor Sheet Metal Hand Book"—a large catalogue on general sheet metal products manufactured by the Milcor Steel Company.

No. 33-C "Milcor Steel Ceilings and Walls" contains many designs of "Perfect-fit" Ceilings and Walls manufactured by the Canton, Ohio, Plant.

No. 35 "Milcor Furnace Pipe and Fittings."

No. 36 "Milcor Metal Ceilings and Walls"—illustrating and describing many of the attractive designs of Milcor Metal Ceilings and Walls.

No. 100-B "Milcor Metal Bases and Window Stools with Expansion Wings."

Partition Handbook—Shows methods of construction of solid Partitions.

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Milcor Products — Special Features

GENERAL DESCRIPTION

Foreword

A careful analysis of the design, materials, and workmanship found in Milcor Products cannot help but impress the most discriminating architect with their exceptionally high quality. Many of the outstanding features are covered by patents and the products which include them are marketed all over the United States. The line is complete.

For the sake of brevity and to avoid needless repetition, following are detailed descriptions and specifications of outstanding features, materials and processes of manufacture which apply to the various Milcor Products hereafter briefed only in the specific description of the particular item.

By Invitation Member

Emblem of
BUSINESS CHARACTER
Rice Leaders of the World Association
Represents High Standing in
NAME-PRODUCT-POLICY
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Expansion Wing Feature

One of the outstanding features of Milcor Lathing Accessories, protected by patent is the expanded metal lath wing which forms an integral part of the corner bead, picture mould, base screed, metal casing, and other products, as illustrated on pages 17 to 35. The wings of various widths are formed of 3/8-inch diamond mesh expanded metal lath.

The advantages over the older types of plastering accessories are apparent:

(1) The network of the expanded metal wings assures keying of the plaster close up to the base of the exposed metal member.

(2) There is a definite economy in labor due to the simplicity of erection—these products can be wired, stapled, nailed or spotted, as best adapted to the particular type of wall construction, without the use of clips.

(3) The force of shocks or blows is dissipated by the network of expanded metal which prevents checking and cracking of plaster at these particularly vulnerable points.

(4) Once erected plumb and true, the Expansion products remain rigidly in place as a permanent plaster bond.

This constructive advance in design has been enthusiastically endorsed by both leading architects and plastering contractors as evidenced by its adoption nationally in an impressive list of buildings.

Wide Range of Materials

Milcor Products as specified under each item are furnished, not only in various weights of metal to adequately adapt them to a variety of spans and uses, but they are made as well in a wide range of selected metals and protective finishes.

Heat Treating—All black sheets, after cutting and expansion, are specially heat treated to remove all oils and surface impurities and to re-anneal the metal. This treatment assures longer life and greater strength to the sheets, adds materially to the protective value of the paint and insures maximum resistance to corrosion.

Painting—All black Metal Lath is painted after cutting, expansion and heat treating, with Milcor Special Elastic Asphaltum Paint.

Galvanizing—All galvanized sheets are tight coated with new, pure zinc spelter before cutting and expansion.

Sheet Steel—Products so specified are cut from the highest grade of carefully inspected prime open-hearth sheet steel, either painted or galvanized as noted.

Copper Alloy Steel—The peculiar ability of copper alloy steel to resist corrosion is well known. Milcor "Copper Alloy" is of standard quality, carefully controlled for uniformity in production.

Products are furnished in Copper Alloy Steel either painted or galvanized as noted.

Armco Ingot Iron and Toncan Iron—Milcor Products are made in both Armco Ingot Iron, the purest iron made, and Toncan Iron, famous for its corrosion-resisting qualities. The superiorities of these metals have been proved beyond any doubt.

Products are furnished in Armco Ingot Iron and Toncan Iron either painted or galvanized as noted.

Anaconda Pure Copper—Under extreme conditions, where destructive acid fumes, salt air or other abnormal atmospheric attack is apt to exist, pure Anaconda copper is frequently used. This copper has great tensile strength and stiffness in addition to its value as positive resistance to corrosion.

Products so noted are available, cut from pure 16-oz. cold rolled Anaconda copper.

Pure Zinc—Products so noted are available, cut from pure zinc Nos. 11 and 12.

Labels

Every bundle of Milcor Lath is conspicuously labeled with a distinctive metal tag vouching clearly for weight and particular metal used. Thus verification of specification requirements is easily insured

METAL TAGS WHICH SERVE TO IDENTIFY MILCOR PRODUCTS

Packing and Crating

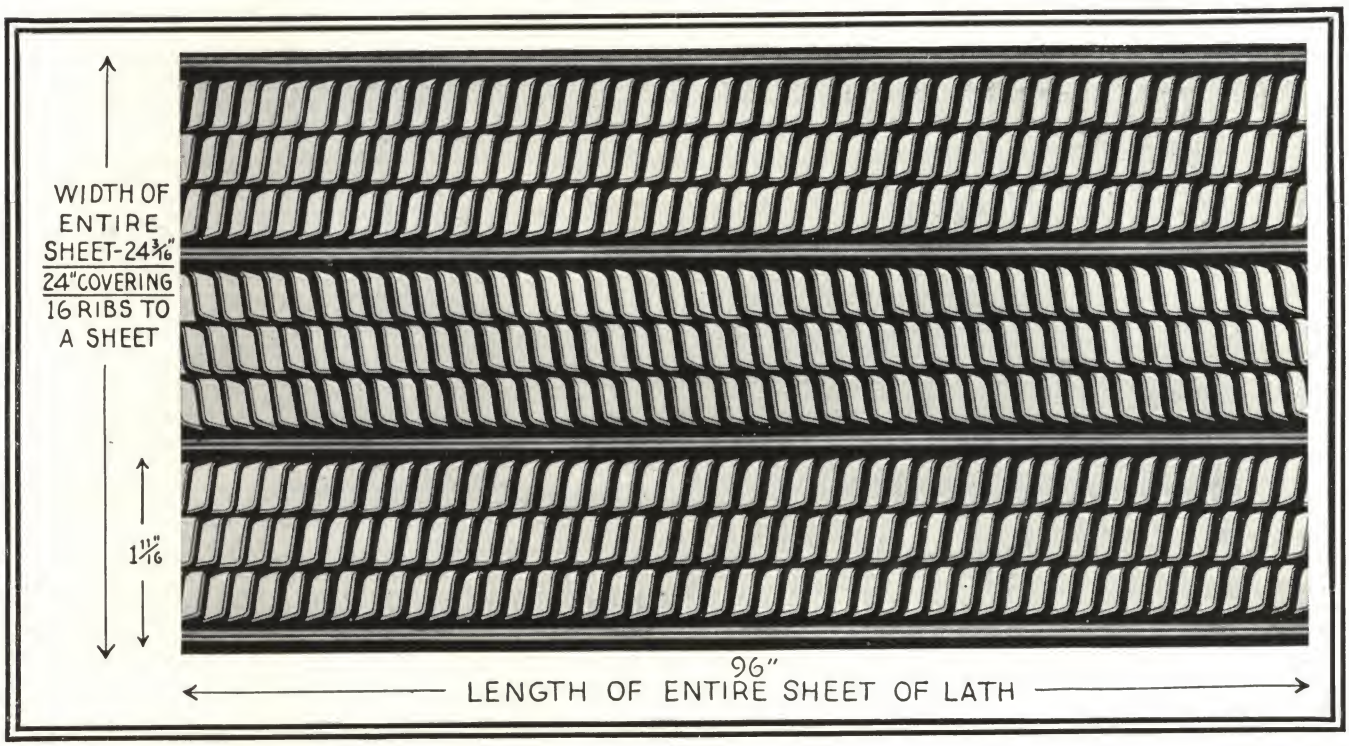
Particular attention is given to provide thoroughly substantial shipping crates for crated materials. Bundle protection insures lath, etc. against injury to the products during shipping, storage, and handling.

The metal tags are shown as examples of labels for identification of Milcor Products. These tags show clearly the name and weight of the materials which they identify.

MILCOR

Kuehn's Specialmesh

A FINE MESH LATH FOR WALLS AND CEILINGS



Description

General Characteristics

Kuehn's Specialmesh is a new rib lath specially adapted for interior walls and ceilings. The meshes are so formed that in plastering the slightest pressure of the trowel completely imbeds the lath, and due to the small mesh, waste of plaster is eliminated. The longitudinal stiffening ribs are 3/8 in. wide, spaced 1 5/8 ins. on center and are connected at 1/4-in. intervals by strands. These strands, in turn, are strongly reinforced at their junctures by stiffening members (two between each pair of ribs.) All sheets are squared on both ends.

Kuehn's Specialmesh is scientifically designed to incorporate the best features of every type of such lath made, and to offer entirely new advantages.

Note These Features—They Are Important

(1) **Scientifically Designed Mesh**—Tests show this size mesh to give the most positive plaster grip.

(2) **Positive Rigidity**—There are 16 ribs to a sheet of Kuehn's Specialmesh, which are corrugated to make them doubly rigid.

(3) **Heat-Treated and Re-annealed** — Heat-treating and re-annealing lengthens the life of the lath and makes for pliability—two very important factors in the efficiency of any metal lath.

(4) **No Plaster Waste**—It is practically impossible to waste plaster (as ordinarily applied) by forcing an unnecessary amount through Kuehn's Specialmesh.

(5) **Easy to Apply**—It has no sharp edges to lacerate the lather's hands.

Specification Data

Sheet Size

24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Materials and Weights (lbs. per sq. yd.)

Note: For complete description of materials, finishes, etc., see page 4.

SHEET STEEL, PAINTED—2.75, 3.00, 3.40, 4.00.

SHEET STEEL, GALVANIZED—3.60.

COPPER ALLOY STEEL, PAINTED—2.75, 3.00, 3.40, 4.00.

ARMCO INGOT IRON OR TONCAN IRON, PAINTED—3.40, 4.00.

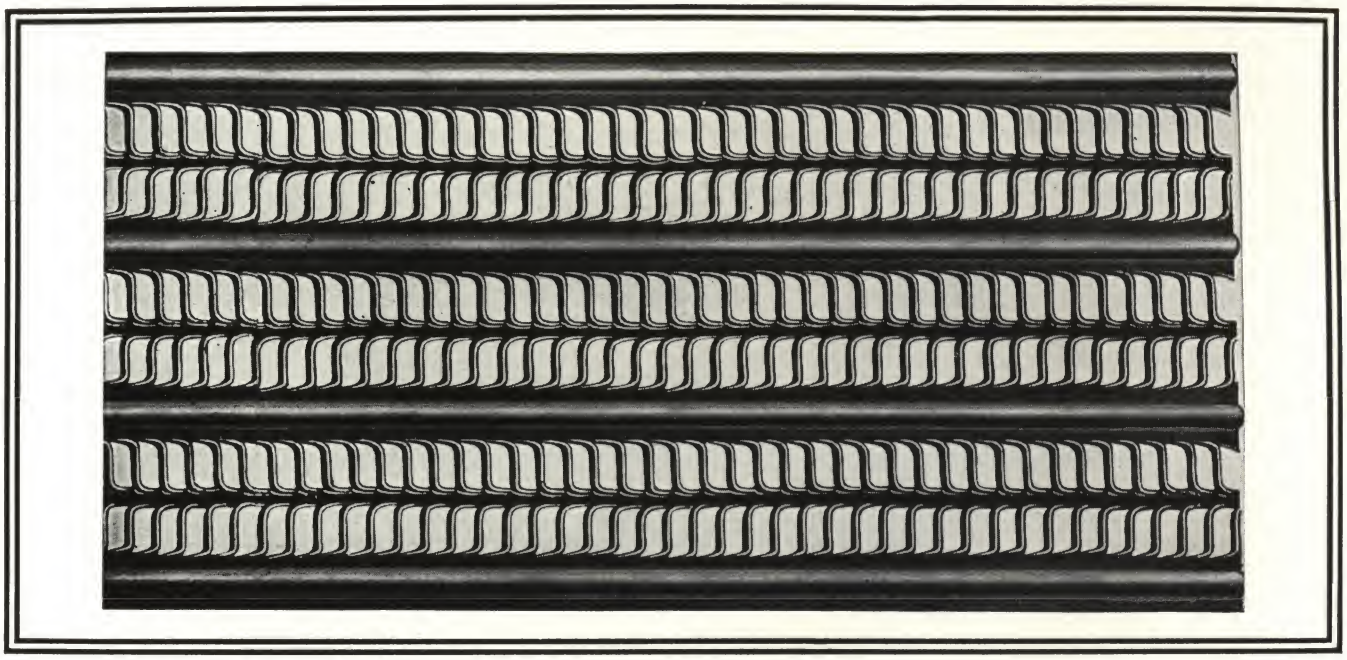
ARMCO INGOT IRON OR TONCAN IRON, GALVANIZED—4.00.

Recommended Weights for Maximum Spacing of Supports (lbs. per sq. yd.)

Weights recommended	Distance Between Supports			
	Walls		Ceilings	
	Nailed on, in.	Tied on, in.	Nailed on, in.	Tied on, in.
2.75	16	16	16	12
3.0	19	19	19	16
3.4	19	19	19	16
4.0	19	19	19	19

MILCOR

Stay-Rib Metal Lath No. 1



Description

No. 1 Stay-Rib Lath is a general utility rib lath, ideally adapted for interior plaster (especially ceilings) and exterior stucco. It is designed for maximum rigidity and, due to its added metal surface, unusual economy of material—an adequate key, at the same time, is assured. The longitudinal stiffening ribs are ½ inch wide, spaced 1¾ inches on center and are interconnected at ¼-inch intervals by strands. These strands, in turn, are strongly reinforced at their centers by a stiffening member.

For both ceiling and wall plaster reinforcement, Milcor Stay-Rib No. 1 is unusually satisfactory. The rigidity of its rib and the character of its expanded design are factors in preventing plaster from falling during application. For suspended ceilings, Stay-Rib No. 1 saves money because it is exceptionally stiff and rigid. Fewer channels and less labor are required because spacing can be made much wider without impairing safety.

After cutting, Milcor Stay-Rib Lath is heat-treated and reannealed which relieves any internal stresses that might have resulted in the expanding process and gives the metal longer life and greater strength. Milcor Special Elastic Paint adds further protection.

Specification Data

Sheet Size

24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Materials and Weights (lbs. per sq. yd.)

Note: For complete description of materials, finishes, etc., see page 4.

SHEET STEEL, PAINTED—2.75, 3.00, 3.40, 4.00.

SHEET STEEL, GALVANIZED—3.60.

COPPER ALLOY STEEL, PAINTED—2.75, 3.00, 3.40, 4.00.

ARMCO INGOT IRON, OR TONCAN IRON PAINTED—3.40, 4.00.

ARMCO INGOT IRON, OR TONCAN IRON, GALVANIZED—4.00.

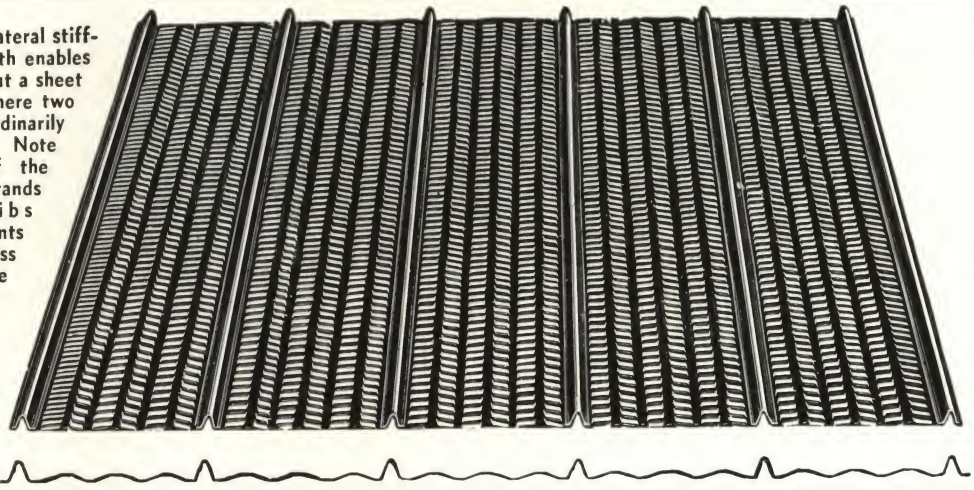
Recommended Weights (lbs. per sq. yd.)

Weights recommended	Distance Between Supports			
	Walls		Ceilings	
	Nailed on, in.	Tied on, in.	Nailed on, in.	Tied on, in.
2.75	16	16	16	16
3.0	19	19	19	16
3.4	19	19	19	19
4.0	19	19	19	19

MILCOR

3/8" Stay-Rib Metal Lath No. 2

The unusual lateral stiffness of this lath enables one man to put a sheet on ceilings where two men would ordinarily be required. Note the angle of the stays or strands between ribs which accounts for a stiffness not possible with diamond mesh lath.



Description

No. 2 Stay-Rib has 3/8-inch heavy longitudinal ribs spaced 4.8 inches on center with five stiffening members between ribs forming adequate reinforcement for the connecting strands spaced at 1/4-inch intervals.

It is ideal for all purposes where a self-furring lath is required.

Due to the strength and rigidity of the ribs, this lath effects very definite economies in both labor and material on furred or suspended ceilings where wide spacing of supporting cross channels is possible.

It is used extensively, without supporting furring, **for ceilings attached directly to the joists** beneath steel dome reinforced concrete construction. It is likewise ideal for both **ceilings and reinforcement** for floor slabs in **standard bar joist** floor and roof construction and for both **hollow and solid plaster partitions** in conjunction with metal studs or channels.

Specification Data

Sheet Size

24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Materials and Weights (lbs. per sq. yd.)

Note: For complete descriptions of materials, finishes, etc., see page 4.

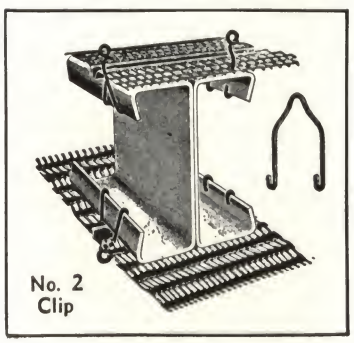
SHEET STEEL, PAINTED—2.75, 3.00, 3.40, 4.00.
SHEET STEEL, GALVANIZED—3.60.
COPPER ALLOY STEEL, PAINTED—2.75, 3.00, 3.40, 4.00.
ARMCO INGOT IRON OR TONCAN IRON, PAINTED—3.40, 4.00.
ARMCO INGOT IRON OR TONCAN IRON, GALVANIZED—4.00.

Recommended Weights (lbs. per sq. yd.)

Weights recommended	Distance Between Supports			
	Walls		Ceilings	
	Nailed on, in.	Tied on, in.	Nailed on, in.	Tied on, in.
2.75	19	19	19	19
3.0	24	24	19	19
3.4	31 1/2	31 1/2	24	24
4.0	31 1/2	31 1/2	24	24

Milcor Metal Lath Clips

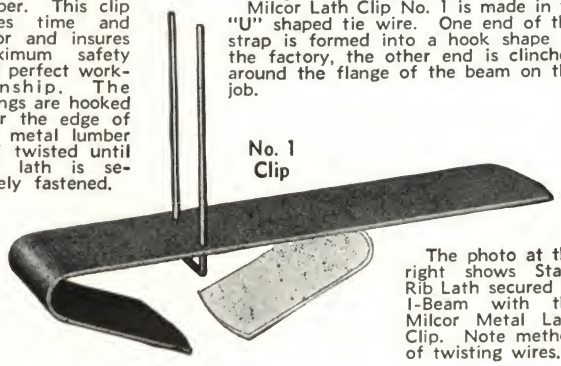
No. 2 Clip with design to facilitate the use of Stay-Rib Metal Lath in connection with metal lumber. This clip saves time and labor and insures maximum safety and perfect workmanship. The prongs are hooked over the edge of the metal lumber and twisted until the lath is securely fastened.



No. 2 Clip

Weight of No. 2 Clip per thousand—9 lbs. Packed in cartons of 1000.

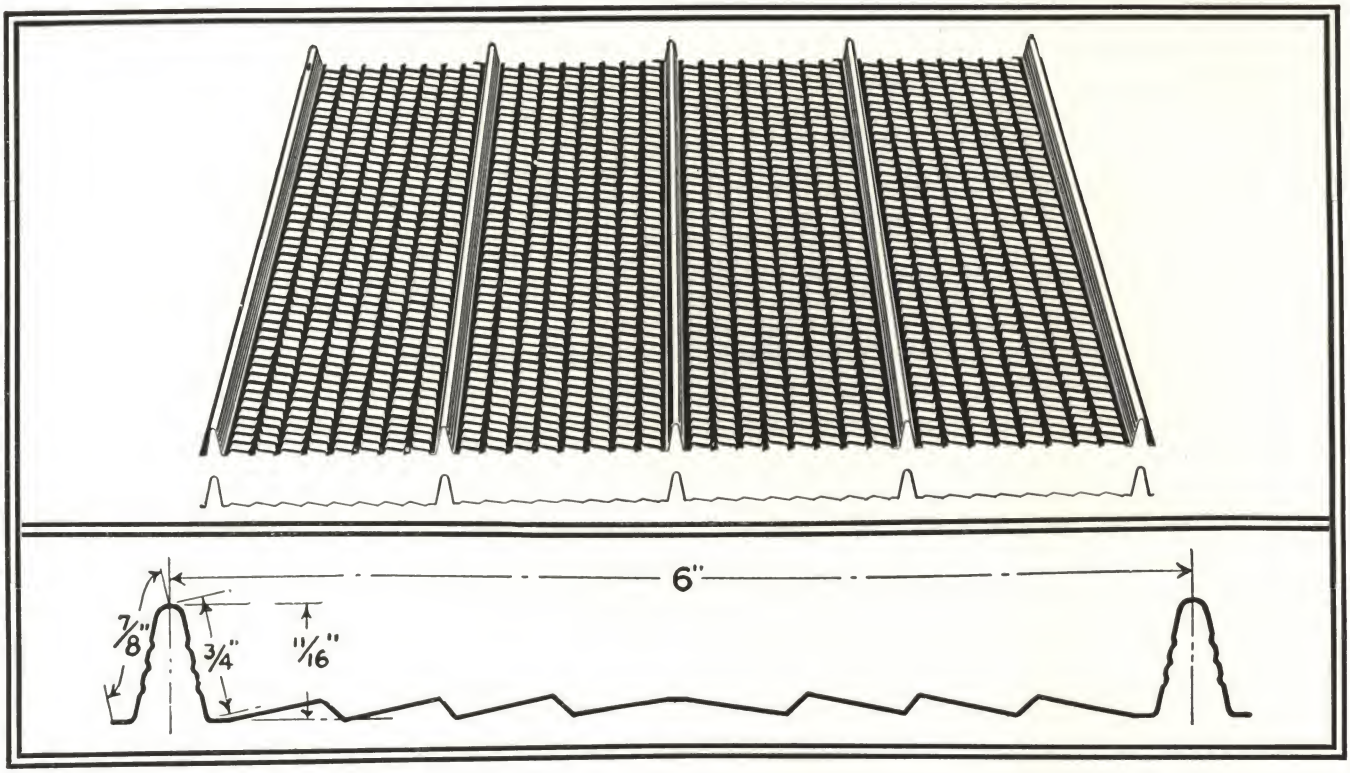
Milcor Lath Clip No. 1 is made in two parts: A flat metal strip and a strong "U" shaped tie wire. One end of the strap is formed into a hook shape at the factory, the other end is clinched around the flange of the beam on the job.



No. 1 Clip

The photo at the right shows Stay-Rib Lath secured to I-Beam with the Milcor Metal Lath Clip. Note method of twisting wires.

¾" Stay-Rib Metal Lath No. 3



Description

No. 3 (¾ inch) Stay-Rib has ¾-inch heavy longitudinal ribs spaced 6 inches on center, with seven stiffening members between ribs, forming adequate reinforcement for the connecting strands spaced at ¼-inch intervals. The Milcor process of forming the heavy ribs is important. They are cold-drawn—not stamped—straight, true and uniform in shape with the sides of the rib sloped and **corrugated** to insure maximum rigidity.

This lath is designed primarily as reinforcement for concrete floors and roofs, serving in addition as a form upon which wet concrete is poured. In this capacity it is most extensively used in connection with steel and bar joists. The lath may also be used in solid slab construction and may be curved to any required form. It is recommended that wherever curved sheets are required, the curving be accurately done **at the factory.**

Besides its adaptability for flat roof reinforcing, it is unexcelled in the construction of fire-safe pitched roofs, sawtooth and monitor-type roofs and their adjoining wall or gable constructions.

No. 3 Stay-Rib is admirably adapted to the construction of solid plaster partitions where, due to the rigidity and reinforcing qualities of the ribs, no studs are required—the lath spans vertically from floor to ceiling.

Laid over wood joists, it is ideal as reinforcing for the concrete base for tile, terrazzo or composition flooring.

Specification Data

Sheet Size

The covering width of each sheet is 24 inches. **Standard sheets are 4, 5, 6, 7, 8, 9, 10, 11, and 12 feet long.** Sheets of intermediate length can be furnished, cut to exact lengths without extra cost (except that of stock waste).

Materials and Weights (lbs. per sq. ft.)

Note: For complete descriptions of materials, finishes, etc., see page 4.

SHEET STEEL, PAINTED—0.46; 0.56; 0.74.

SHEET STEEL, GALVANIZED—On order. 0.53.

COPPER ALLOY STEEL, PAINTED—0.46; 0.56; 0.74.

ARMCO INGOT IRON OR TONCAN IRON, PAINTED—0.46; 0.56; 0.74.

ARMCO INGOT IRON OR TONCAN IRON, GALVANIZED—On order. 0.60.

Cross Sectional Areas (sq. in. per ft. width)

.46—.1235; .56—.1482; .74—.1977.

No. 3 (¾") Stay-Rib Metal Lath

TABLE OF TOTAL SAFE LOADS

FOR CONCRETE SLABS REINFORCED WITH ¾-INCH STAY-RIB NO. 3

Assumed Conditions

Loads given are Live Loads plus Dead Loads.

Stress in steel—16,000 lbs. per sq. in.

Stress in concrete (fc) variable as per table—given in pounds per square inch.

Ratio on Modulus of Elasticity of Steel (Es) to Modulus of Elasticity of Concrete (Ec) = n = 15.

Distance of Center of Gravity of lath above bottom of sheet—.163 of an inch.

Resisting Moment (R. M.)—given in inch pounds per foot width.

Table based on moment of $\frac{WL}{10}$

Thickness of concrete, in.	Weight of slab, per sq. ft., lbs.	Weight of slab with ½ in. portland cement plaster on under side, lbs.	Weight of lath per sq. ft., lbs.	Resisting moment (R. M.) inch lbs. per foot of width	Stress in concrete in lbs. per sq. in. (fc)	Total Safe Loads in Pounds per Square Foot for Spans as Indicated in Feet								
						3 ft.	4 ft.	5 ft.	6 ft.	7 ft.	8 ft.	9 ft.	10 ft.	11 ft.
2	24	30	0.46	3230	540	299	168	108	75	55				
2	24	30	.56	3840	600	355	200	128	89	65	50			
2	24	30	.74	5050	690	468	263	168	117	86	66	52		
2½	30	36	.46	4150	460	384	216	138	96	71	54	43		
2½	30	36	.56	4940	520	458	258	165	114	84	64	51		
2½	30	36	.74	6490	620		338	216	150	110	85	67	54	
3	36	42	.46	5084	410	470	265	170	118	87	66	52		
3	36	42	.56	6049	460	560	315	202	140	103	79	62	50	
3	36	42	.74	7960	550		415	266	184	135	104	82	66	55
3½	42	48	.46	6000	380	555	312	200	139	102	78	62		
3½	42	48	.56	7160	420		373	238	165	122	93	74	60	
3½	42	48	.74	9440	490		490	315	218	161	123	97	78	65
4	48	54	.46	6960	350		363	232	161	118	91	72	58	
4	48	54	.56	8289	390		432	276	192	141	108	85	69	57
4	48	54	.74	10920	460		568	364	252	186	142	112	91	75

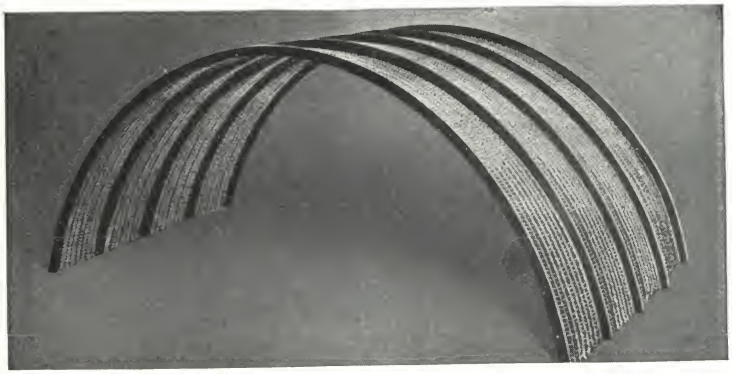
Note: This table should not be used unless under side of slab is given a coat of portland cement plaster ½ inch thick.

WEIGHTS OF LATH FOR CARRYING WET CONCRETE OVER VARIOUS SPANS

Weight of lath per sq. ft., lbs.	Allowable Spans for Wet Concrete Poured to Thickness Indicated				
	2-in. slab	2½-in. slab	3-in. slab	3½-in. slab	4-in. slab
0.46	3 ft. 3 in.	3 ft.	2 ft. 9 in.	2 ft. 6 in.	2 ft. 3 in.
.56	3 ft. 6 in.	3 ft. 3 in.	3 ft.	2 ft. 9 in.	2 ft. 6 in.
.74	4 ft.	3 ft. 9 in.	3 ft. 3 in.	3 ft.	2 ft. 9 in.

When longer spans than those given above are required, temporary supports should be used to maintain these maximum spacings.

Milcor ¾-inch Stay-Rib Metal Lath No. 3 is admirably suited for use in solid partitions, with ribs perpendicular to the floor. The strong ¾-inch ribs are so rigid that no upright channels are required.

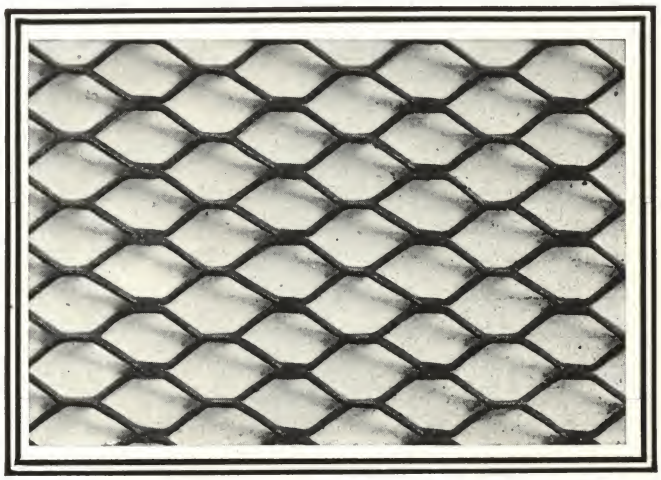


Lath sheets of Milcor Stay-Rib No. 3 may be curved to any desired radius, or curved at the ends and flat in the center, with ribs to the outside only.

Sheets may also be curved to form a complete circle.

Netmesh AND Smalmesh {EXPANDED DIAMOND MESH} Metal Laths

PLAIN



Description

Netmesh Metal Lath is $\frac{11}{32}$ inch by $\frac{9}{16}$ inch expanded Diamond Mesh produced by special machines and equipment, designed and built by Milcor engineers. Smalmesh is $\frac{9}{32}$ inch by $\frac{15}{32}$ inch expanded Diamond Mesh. Due to the close rigid mesh only a comparatively small amount of plaster is required to produce a perfect key resulting in plastering speed, ease and economy in plastering material.

Netmesh and Smalmesh are general utility laths ideally suited to the ordinary lathing need. They can be readily bent or formed for furred or ornamental members and for fireproofing of steel beams, girders, and columns.

Specification Data

Sheet Size

24x96 in., packed 9 sheets (16 sq. yds.) per bundle.
All sheets are squared on both ends.

Materials and Weights (lbs. per sq. yd.)

Note: For complete descriptions of materials, finishes, etc., see page 4.

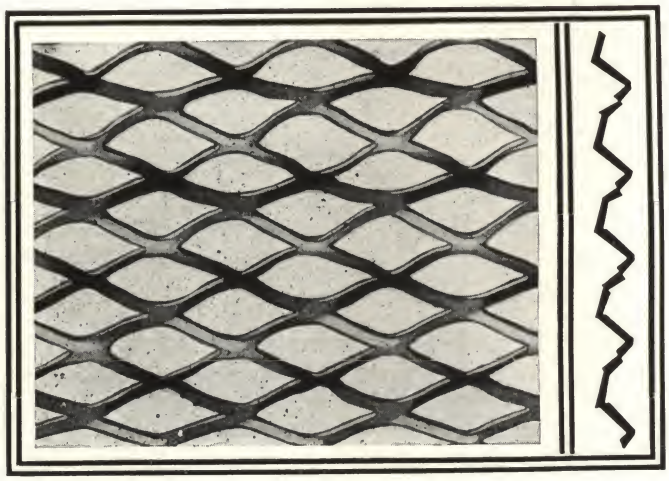
SHEET STEEL, PAINTED—2.20, 2.50, 3.00, 3.40.
SHEET STEEL, GALVANIZED—2.50, 3.40.
COPPER ALLOY STEEL, PAINTED—2.20, 2.50, 3.00, 3.40.
ARMCO INGOT IRON OR TONCAN IRON, PAINTED—2.50, 3.40.
ARMCO INGOT IRON OR TONCAN IRON, GALVANIZED—2.50, 3.40.
NO. 11 PURE ZINC—2.8.
16-OZ. COPPER—3.0.

Recommended Weights (lbs. per sq. yd.)

Recommended weights	Distance Between Supports			
	Walls		Ceilings	
	Nailed on, in.	Tied on, in.	Nailed on, in.	Tied on, in.
2.5	16	12	....	....
3.0	16	13½	13½	12
3.4	16	13½	16	13½

Note: Expanded Metal Lath weighing 2.2 lbs. per sq. yd. is regularly manufactured and available for use in partitions where Underwriter's Standards are not exacted; it is also suitable for corner reinforcements (Corner Lath).

CORRUGATED (Self-furring)



Description

Netmesh and Smalmesh Corrugated Metal Laths have the characteristics of standard mesh with corrugations added running longitudinally (the length of the sheet). These laths are self-furring—no furring strips are required. The corrugations act as furring and allow the plaster or stucco base to fill in between the lath and the supporting stud, sheathing or wall forming an adequate key.

These laths are ideal for exterior stucco work, either back plastered (spanning studs without sheathing) or applied directly over sheathing covered with waterproof paper.

Specification Data

Sheet Size

24x96 in., packed 9 sheets (16 sq. yds.) per bundle.
All sheets are squared on both ends.

Materials and Weights (lbs. per sq. yd.)

Note: For complete description of materials, finishes, etc., see page 4.

SHEET STEEL, PAINTED—2.20, 2.50, 3.00, 3.40.
SHEET STEEL, GALVANIZED—2.50, 3.40.
COPPER ALLOY STEEL, PAINTED—2.20, 2.50, 3.00, 3.40.
ARMCO INGOT IRON OR TONCAN IRON, PAINTED—2.50, 3.40.
ARMCO INGOT IRON OR TONCAN IRON, GALVANIZED—2.50, 3.40.

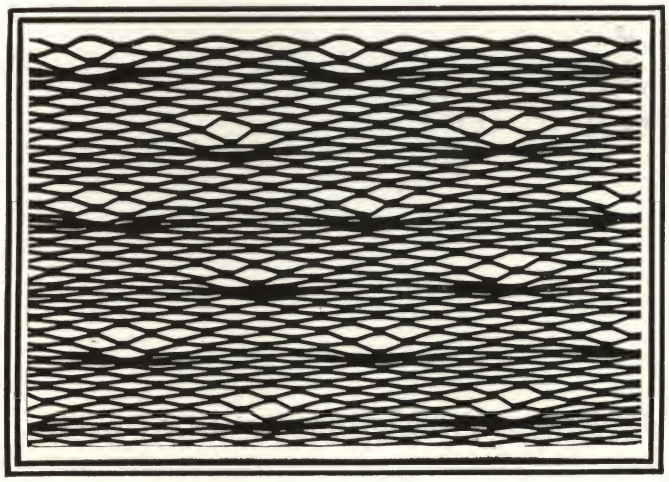
Recommended Weights (lbs. per sq. yd.)

OVER SHEATHING, ETC.—Studs 16 in. O. C., 2.50.
BACK-PLASTERED—Studs 16 in. O. C., 3.40.

MILCOR

Furlath

Self-furring Expanded Diamond Lath



Description

Furlath is a ⅜-inch mesh diamond expanded self-furring lath designed for exterior stucco. It has the general characteristics of Netmesh (see page 10). The self-furring feature consists of staggered indentations or stools spaced 3½ inches apart horizontally and 2 inches apart vertically, which hold the body of the lath ⅜ of an inch away from the sheathing or wall. The deforming has a stiffening effect and assures complete embedding of lath with the first coat of stucco and locates the reinforcement centrally in a continuous sheet. Furlath should be secured to the sheathing at each depression or stool with a six-penny nail.

Specification Data

Sheet Size

24x96 in., packed 9 sheets (16 sq. yds.) per bundle.
All sheets are squared on both ends.

Materials and Weights (lbs. per sq. yd.)

Note: For complete description of materials, finishes, etc., see page 4.

SHEET STEEL, PAINTED—2.20, 2.50, 3.00, 3.40.

SHEET STEEL, GALVANIZED—2.50, 3.40.

COPPER ALLOY STEEL, PAINTED—2.20, 2.50, 3.00, 3.40.

ARMCO INGOT IRON OR TONCAN IRON, PAINTED—2.50, 3.40.

ARMCO INGOT IRON OR TONCAN IRON, GALVANIZED—2.50, 3.40.

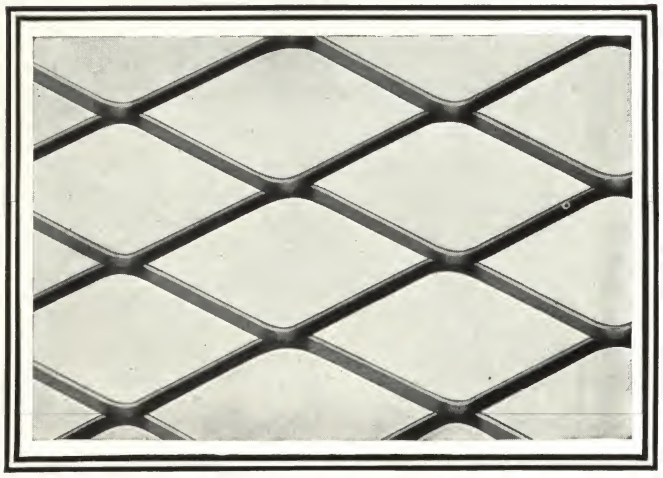
Recommended Weights (lbs. per sq. yd.)

OVER SHEATHING, ETC.—Studs 16 in. O. C., 2.50.

BACK-PLASTERED—Studs 16 in. O. C., 3.40.

Big-Mesh

Extra Large Diamond for Stucco



Description

Success with stucco requires not only a correct plastering base, but proper reinforcement as well. This reinforcement must be such that the plastering operation will easily and effectively make it an integral part of the stucco slab.

With these requirements in mind Milcor Big Mesh Stucco Lath has been designed essentially for stucco work applied either by hand or "gunite" machine. it is expanded into diamond meshes 1½x3 inches with heavy connecting strands.

Since reinforcement is the essential feature, furring is necessary. This is accomplished economically by the Milcor Furring Nail, 1½ inches long, equipped with a spacing device held close up into the mesh angles, placing the wings so that the conveying strands rest on its top edge, ⅜ of an inch out from the sheathing.

Furring Nail

Specification Data

Material

COPPER ALLOY STEEL, PAINTED.

Sheet Size and Weight (lbs. per sq. yd.)

48x96 in., 1.8 lbs., packed 10 sheets (35⅓ sq. yds.) per bundle.

48x96 in., 3.6 lbs., packed 10 sheets (35⅓ sq. yds.) per bundle.

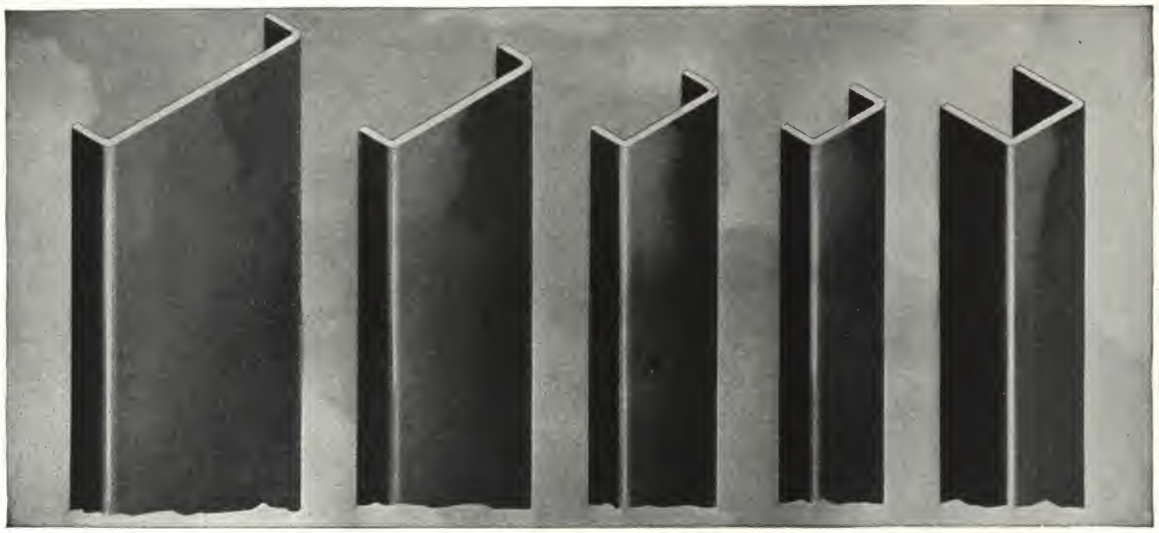
All sheets are squared on both ends.

Application

Beginning at the top, apply with the long dimension horizontally. Bend sheets around all corners and angles. Lap sheets one full diamond at junctures. Space furring nails (staggered) not more than 10 inches O. C. vertically and 12 inches O. C. horizontally.

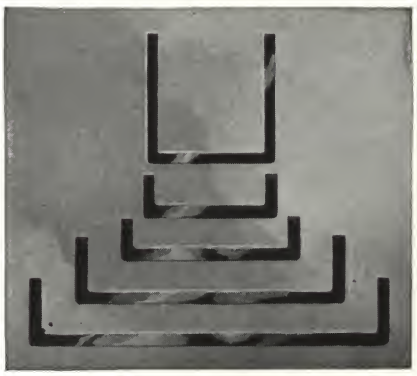
MILCOR

Cold AND Hot Rolled Steel Channels



Description

Milcor Cold Rolled Steel Channels are made of 16-gauge pressed steel, combining great tensile strength with light weight. The legs are accurately rolled at right angles furnishing a level surface on all three sides and maximum stiffness or rigidity. The channels are uniform in section and straight throughout their entire length. Compared with Hot Rolled Channels, Cold Rolled Channels, while



of equal structural strength, are more easily cut and bent.

They are adapted to use as supporting members for metal lath on solid plaster partitions, hollow-stud partitions, metal furring, and suspended ceilings. Solid partitions not only save space but they are thoroughly fireproof, permanently immune to cracking, effective barriers to sound, and economical.

Specification Data

COLD ROLLED CHANNELS

Stock Sizes and Weights

PENCIL CHANNELS—$\frac{7}{16}$x$\frac{7}{16}$ in. x 16 ft. long—131 lbs. per 1,000 lin. ft. Packed 20 channels to a bundle.

CUBRO CHANNELS—$\frac{5}{8}$x$\frac{5}{8}$ in. leg depth x 16, 18, 20 ft. long—270 lbs. per 1,000 lin. ft. Packed 20 channels to a bundle.

¾-INCH CHANNELS—¾x⅜ in. leg depth x 16, 18, 20 ft. long—276 lbs. per 1,000 lin. ft. Packed 20 channels to a bundle.

1-INCH CHANNELS—1x⅜ in. leg depth x 16, 18, 20 ft. long—332 lbs. per 1,000 lin. ft. Packed 10 channels to a bundle.

1½-INCH CHANNELS—1½x⅜ in. leg depth x 16, 18, 20 ft. long—456 lbs. per 1,000 lin. ft. Packed 10 channels to a bundle.

2-INCH CHANNELS—2x⅜ in. leg depth x 16, 18, 20 ft. long—552 lbs. per 1,000 lin. ft. Packed 10 channels to a bundle.

Maximum Permissible Heights (Non-bearing Partitions)

Note: Comparison of these maximum permissible heights with those of other fireproof partition materials will show the wide margin by which this construction exceeds.

¾-INCH CHANNELS—2 in. thick solid—10 ft.; 2½ in. thick solid—12 ft.

1-INCH CHANNELS—2 in. thick solid—12 ft.; 2½ in. thick solid—16 ft.

1½-INCH CHANNELS—2½ in. thick solid—22 ft.; 3 in. thick solid—24 ft.

TWO ¾-INCH CHANNELS—3 in. or more hollow—24 ft.

HOT ROLLED CHANNELS

Stock Sizes and Weights

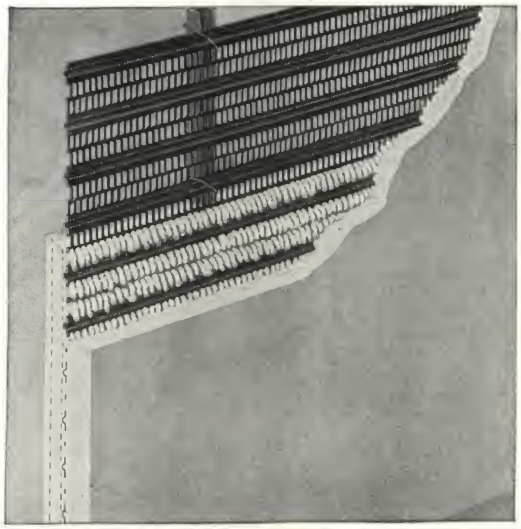
¾-INCH CHANNELS—¾x$\frac{5}{16}$ in. leg depth x 16, 18, 20 ft. long—.30 lbs. per ft.

1-INCH CHANNELS—1x⅜ in. leg depth x 16, 18, 20 ft. long—.41 lbs. per ft.

1½-INCH CHANNELS—1½x$\frac{7}{16}$ in. leg depth x 16, 18, 20 ft. long—.85 lbs. per ft.

2-INCH CHANNELS—2x$\frac{7}{16}$ in. leg depth x 16, 18, 20 ft. long—1.26 lbs. per ft.

MILCOR Cold and Hot Rolled Steel Channels



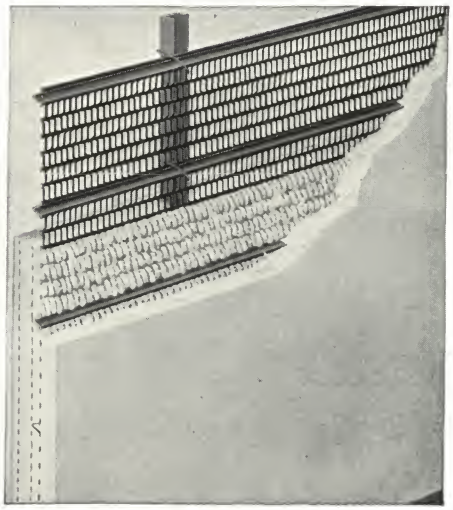
Plastering on a base of Milcor Metal Lath on any of the Milcor Steel Channels described on page 12 answers every requirement for the construction of fireproof walls, ceilings and partitions.

Illustration at right shows 3/8-in. Stay-Rib No. 2 Lath, used with Cubro Channels in solid partition construction, showing application of plaster.

Illustration at left shows Stay-Rib Metal Lath No. 1 in solid partition. Plaster is applied to one side and then to the other as shown here.

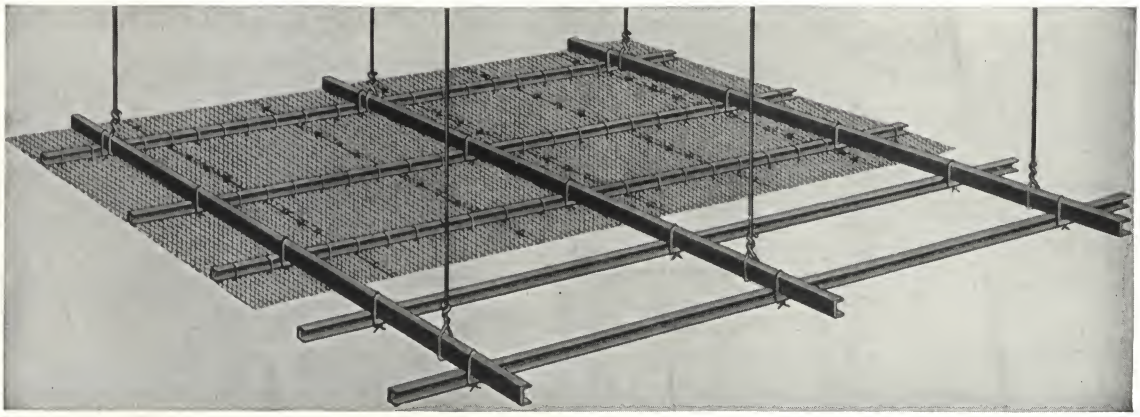
One type of hollow partition erected with Milcor Steel Channels is shown below. The illustration indicates angle irons used as floor runners. Steel channels are more frequently used as floor and ceiling runners, however, because they hold the upright channels more securely in position during the course of erection.

Send for "Partition Handbook" for complete information on solid partitions.



Solid partition showing Milcor Netmesh Metal Lath on Cubro Channels before plastering. Floor and Ceiling Cubro runner-channels merely pinched on each side of upright Cubro Channels.

3/4-in. Stay-Rib Metal Lath No. 3 can be used in solid partition construction without channels, ribs perpendicular to floor. Angle-irons or special channels may be used for floor and ceiling runners.

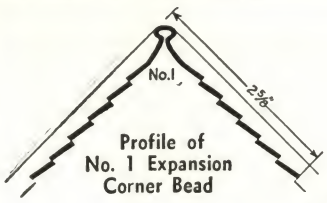


For suspended ceilings Kuehn's Specialmesh, Netmesh and Stay-Rib Metal Lath are highly practical and efficient. Flat steel hangers 1 in. by $\frac{3}{16}$ in., or 1/4-in. round steel hangers, spaced not to exceed 4 ft. apart, attached to the floor construction, form the support, from which is suspended framing, made up of 1 1/2-in. Milcor Steel Runner Channels crossed by 3/4-in. Milcor Steel Furring Channels and tied with No. 16 Wire.

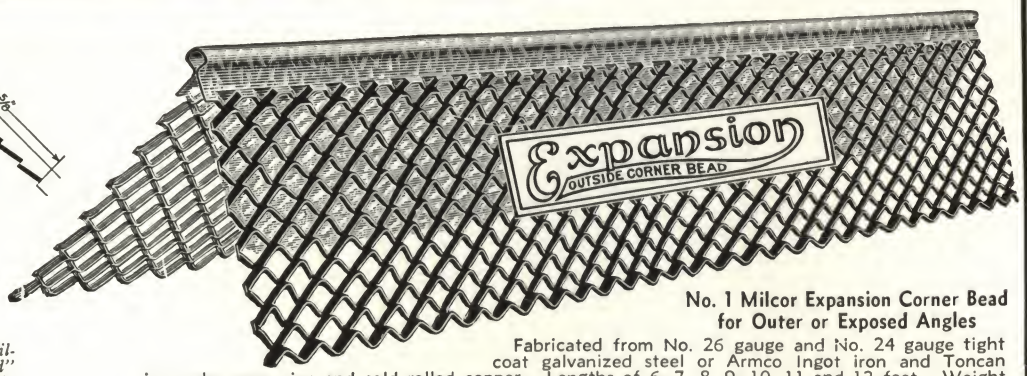
MILCOR

No. 1 Expansion (2⅝″) CORNER BEAD

5″ Wing, 24-Gauge Expansion CORNER BEAD



Profile of No. 1 Expansion Corner Bead



Look for the lettering: "Milcor Expansion Corner Bead" which is stamped on the side of each bead. Demand the genuine. ***Refuse imitations.***

No. 1 Milcor Expansion Corner Bead for Outer or Exposed Angles

Fabricated from No. 26 gauge and No. 24 gauge tight coat galvanized steel or Armco Ingot iron and Toncan iron, also pure zinc and cold rolled copper. Lengths of 6, 7, 8, 9, 10, 11 and 12 feet. Weight per 1,000 feet: No. 26 gauge, 230 lbs. crated; No. 24 gauge, 300 lbs. Packed approximately 500 and 1,000 feet to the crate. Patents Nos. 1,419,232 and 1,482,600.

Note installation view on page 2. For full description of Expansion Feature, see page 4.

All Milcor Expansion Corner Bead packed in wooden crates.

Description

The exclusive feature of Milcor Expansion Corner Beads is the use of Expanded Diamond Mesh reinforcement in the wings or webs instead of practically solid members as in other types. The wings of expanded metal permit keying the plaster right up to the bead. Every square inch of these wings reinforces the plaster. There are no smooth surfaces to which the plaster may or may not "stick." The result is effective reinforcement where it is most needed . . . and substantial assurance that the plaster corners will withstand much more than the average abuse.

Milcor Expansion Corner Bead can be wired, stapled, stuck or nailed to any kind of wall construction at lowest cost—no clips are necessary.

General Characteristics

Narrow rounded nose. Standard wing width 2½ inches with finished edges—not rough or jagged. Obtainable (special) with one narrow wing—1, 1¼, 1½, 1¾, 2, 2¼, or 2½ inches wide. A general utility corner bead.

Specification Data

Materials, Weights, etc.

Note: For complete description of materials, finishes, etc., see page 4.

SHEET STEEL, GALVANIZED—26 gauge—230 lbs. per 1,000 lin. ft.; 24 gauge—300 lbs. per 1,000 lin. ft.; 6, 7, 8, 9, 10, 11 and 12 ft. long. Packed approximately 500 and 1,000 lin. ft. per crate.

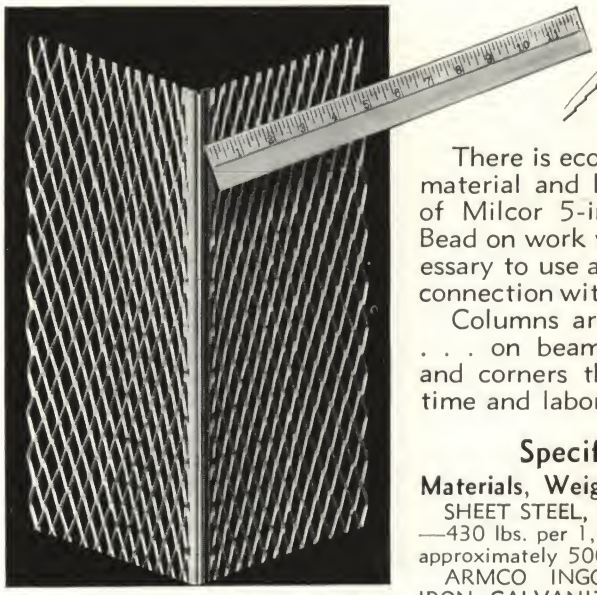
ARMCO INGOT IRON OR TONCAN IRON, GALVANIZED—26 gauge—230 lbs. per 1,000 lin. ft.; 24 gauge—300 lbs. per 1,000 lin. ft.; 6, 7, 8, 9, 10, 11 and 12 ft. long. Packed approximately 500 and 1,000 lin. ft. per crate.

PURE ZINC—No. 12—290 lbs. per 1,000 lin. ft.; 8, 9, 10 and 12 ft. long. Packed approximately 500 and 1,000 lin. ft. per crate.

COLD ROLLED COPPER—16 oz.—230 lbs. per 1,000 lin. ft.; 8, 9, 10 and 12 ft. long. Packed approximately 500 lin. ft. per crate.

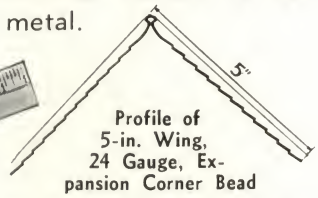
Description

Milcor 5-inch Wing, 24-gauge Expansion Corner Bead has the same advantages as No. 1 Expansion Corner Bead with the additional feature of full 5-inch wings of expanded metal.



Milcor 5-in. Wing, 24 Gauge Expansion Corner Bead

Has expanded metal wings full 5 inches in width. Patent Nos. 1,419,232 and 1,482,600. Other patents pending



Profile of 5-in. Wing, 24 Gauge, Expansion Corner Bead

There is economy due to saving in material and labor through the use of Milcor 5-inch Wing Expansion Bead on work where it would be necessary to use a strip of metal lath in connection with a narrow wing bead.

Columns are formed more easily . . . on beams, mullions, pilasters and corners the 5-inch wings save time and labor.

Specification Data

Materials, Weights, etc.

SHEET STEEL, GALVANIZED—24 gauge—430 lbs. per 1,000 lin. ft. crated. Packed approximately 500 ft. per crate.

ARMCO INGOT IRON OR TONCAN IRON, GALVANIZED—24 gauge—430 lbs. per 1,000 lin. ft. crated. Packed approximately 500 ft. per crate.

LENGTHS—Same as No. 1 Expansion Corner Bead.

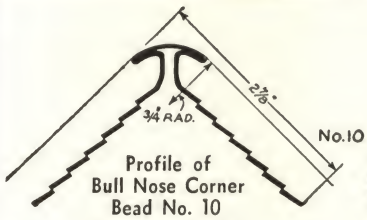
MILCOR Corner Bead Setter

The Milcor Corner Bead Setter makes precision corners certain and enables one man to set more corner bead of any type than two men can by old methods. Three spirit levels make this bead setter practical for either perpendicular or horizontal positions.

No. 10 Bull Nose Expansion Corner Bead

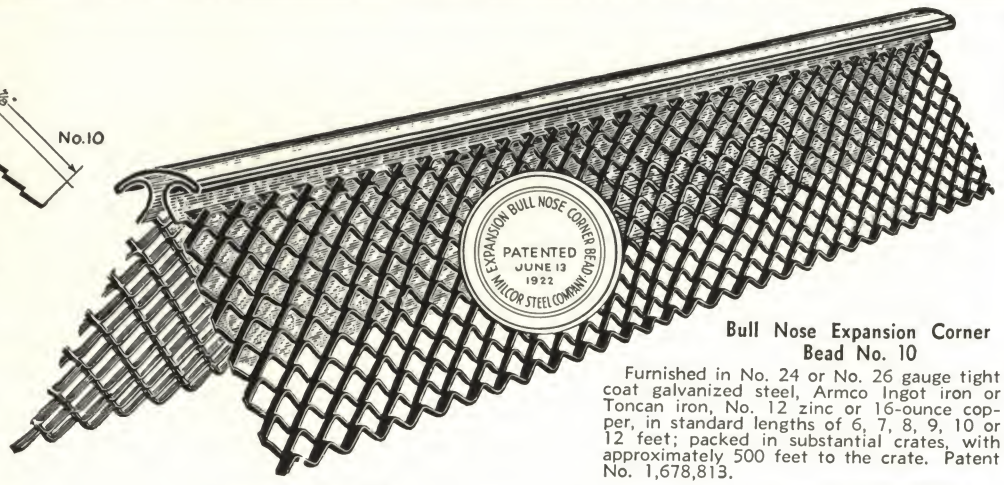
(For Full Description of Expansion Feature, see Page 4)

No. 11 (Reinforced) Bull Nose Expansion Corner Bead



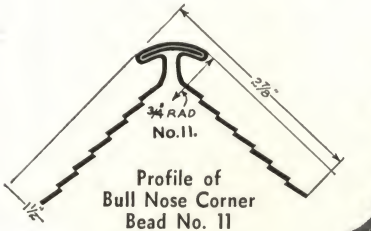
Profile of Bull Nose Corner Bead No. 10

Furnished with 5-inch Wing if desired. Radius may be ¾, 2½ or 3 inch.

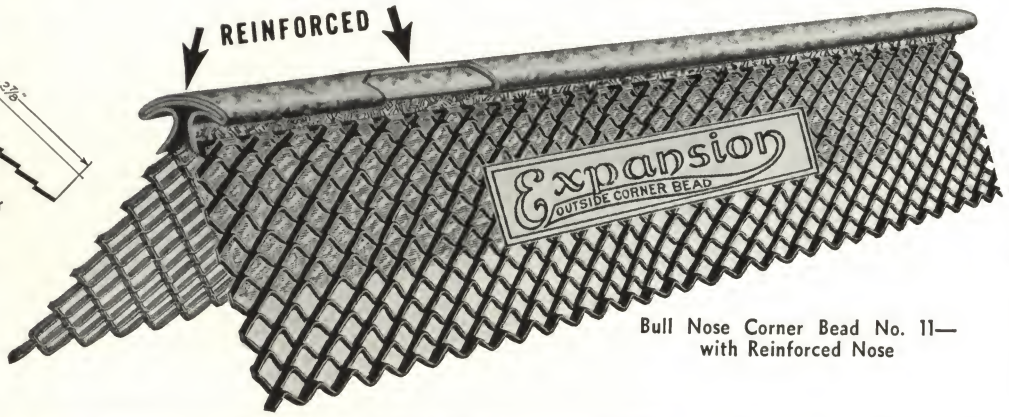


Bull Nose Expansion Corner Bead No. 10

Furnished in No. 24 or No. 26 gauge tight coat galvanized steel, Armco Ingot iron or Toncan iron, No. 12 zinc or 16-ounce copper, in standard lengths of 6, 7, 8, 9, 10 or 12 feet; packed in substantial crates, with approximately 500 feet to the crate. Patent No. 1,678,813.



Profile of Bull Nose Corner Bead No. 11 Showing Reinforcement



Bull Nose Corner Bead No. 11— with Reinforced Nose

Description

General Characteristics

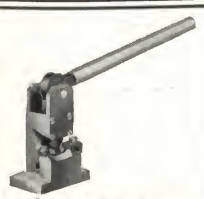
No. 10 Bull Nose Expansion Corner Bead is ideal where broad, heavy, curved corners are desired for sanitary conditions, for pleasing appearance, and for supreme protection of plastered walls against heavy furniture, carts, wheel chairs and other objects which are moved frequently.

The Bull Nose Bead has the same advantages as the narrow nose, regular Expansion Corner Bead No. 1.

One-inch nose (¾-inch radius). Standard wing width 2¾ inches with finished edges—not rough or ragged. Specially adapted for hospitals, hotels, schools, institutions and office buildings. Specify joints at miters cut with Milcor Coping Machine.

Illustrations of No. 10 Bull Nose Expansion Corner Bead used in conjunction with other Milcor products are given on pages 2 and 25.

No. 11 Bull Nose Expansion Corner Bead is furnished with reinforced nose as shown in illustration above. This extra strength is desirable when particularly hard usage is anticipated. Reinforcing strip can be 26, 24 or 20 gauge sheet steel. Radius of 2½ or 3 inches furnished if desired.



Coping Machine

A special portable Coping Machine, which can be set up anywhere on the job, is used to cut the broad Bull Nose for precise, tightly fitting corners.

All Milcor Corner Beads are neatly and securely packed in heavy wooden crates. This ultra-safe packing precludes any possibility of damage in transit or on the job. The beads come to you precisely straight and true.

Specification Data

Materials and Weights

Note: For complete description of materials, finishes, etc., see page 4.

SHEET STEEL GALVANIZED—26 gauge—375 lbs. per 1,000 lin. ft., crated; 24 gauge—470 lbs. per 1,000 lin. ft., crated. 6, 7, 8, 9, 10, and 12 ft. long. Packed approximately 500 lin. ft. per crate.

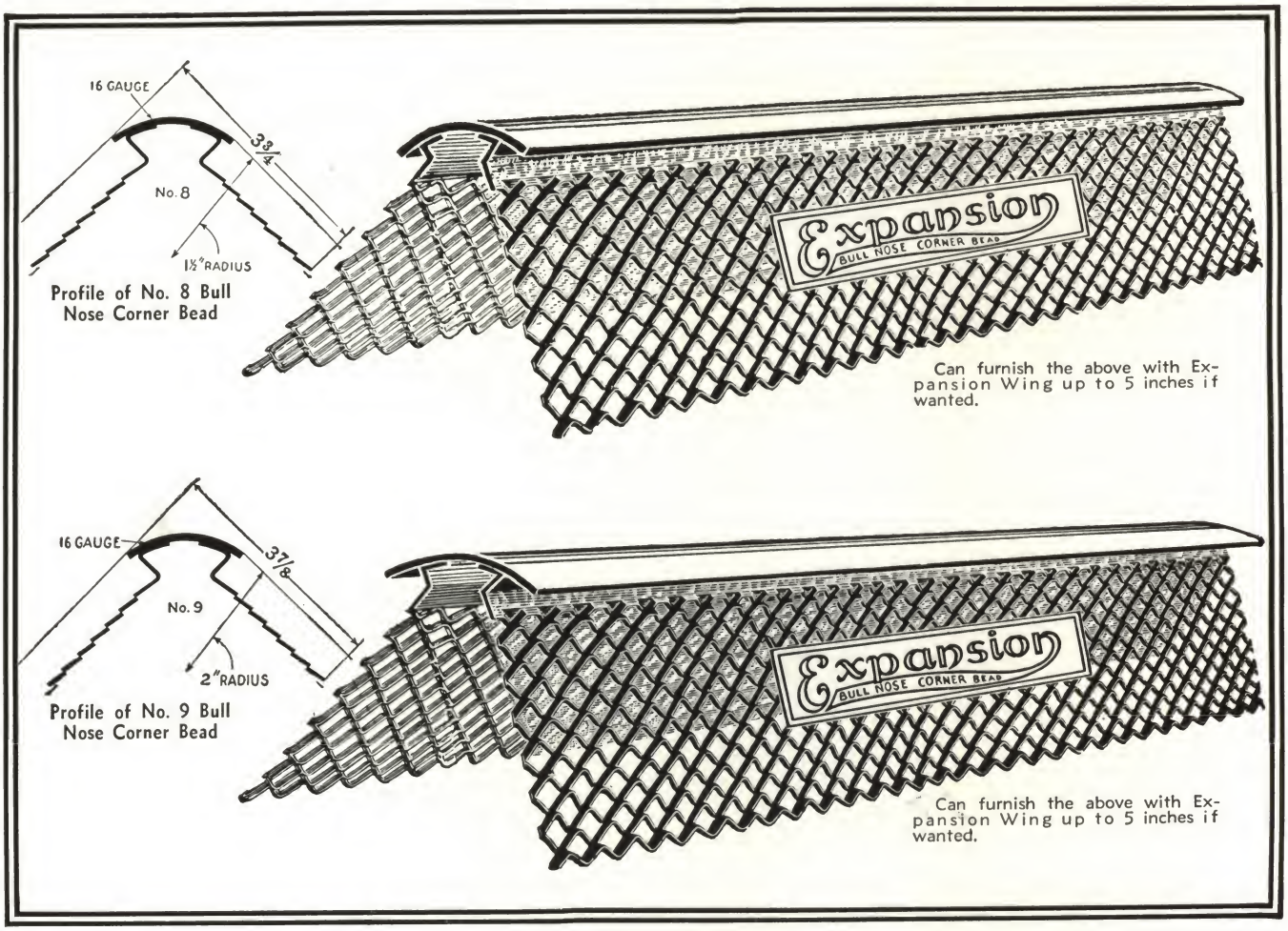
ARMCO INGOT IRON OR TONCAN IRON, GALVANIZED—26 gauge—375 lbs. per 1,000 lin. ft., crated; 24 gauge—470 lbs. per 1,000 lin. ft., crated. 6, 7, 8, 9, 10 and 12 ft. long. Packed approximately 500 lin. ft. per crate.

COLD ROLLED COPPER—16 oz.—470 lbs. per 1,000 lin. ft., crated. 6, 7, 8, 9, 10 and 12 ft. long. Packed approximately 500 lin. ft. per crate.

Note: Weights of No. 11 are heavier according to gauge of reinforcing strip used.

Nos. 8 and 9 Bull Nose Corner Bead

With Expanded Metal Wings

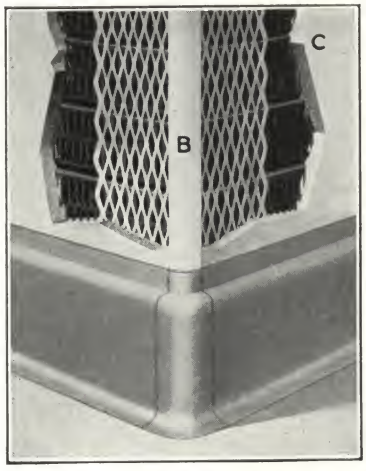


Description

General Characteristics

No. 8 Bull Nose Corner Bead with expanded metal wings is for use where extra broad, heavy, curved corners are desired. The 16-gauge nose of the Bead has a face 2⅛ ins. in width, curved to a 1½-in. radius. 24-gauge Expanded Metal Wings of standard 2¾ in. width are spot-welded to the broad nose of the bead in such manner as to reinforce the heavy face of the bead. This construction gives the No. 8 Bull Nose the same advantages as the regular Milcor Expansion Corner Bead in addition to the broad nose feature.

No. 9 Bull Nose Corner Bead is similar to No. 8 except that it has a face 2¼ ins. wide, curved to a 2-in. radius.



Corner Showing Bull Nose Corner Bead No. 8 in Position in Plastered Wall

With portion of base exposed to show: "B"—the exposed solid bull nose of the bead and its expanded metal; and "C"—Stay-Rib Metal Lath No. 1.

Specification Data

Materials and Weights

Note: For complete description of materials, finishes, etc., see page 4.

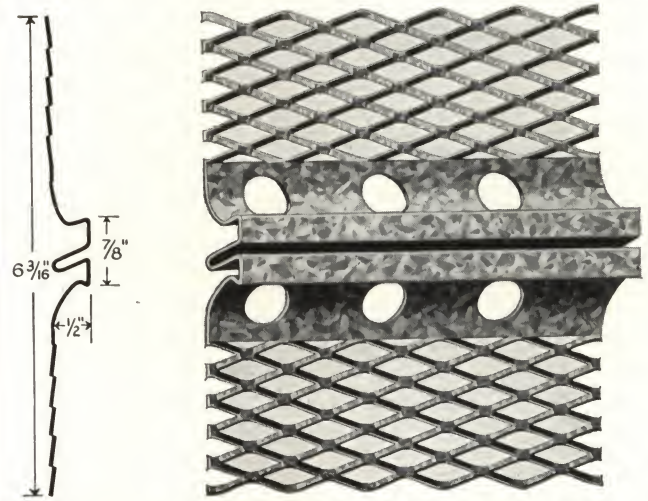
SHEET STEEL—Tight-coat, galvanized, 16-gauge nose and 24-gauge expanded metal wing. No. 8—550 lbs. per 1000 lin ft. crated; No. 9—900 lbs. per 1000 lin. ft. crated. 6, 7, 8, 9, 10 and 12 ft. long. Packed approximately 500 lin. ft. per crate.

ARMCO INGOT IRON OR TONCAN IRON, GALVANIZED—No. 8—550 lbs. per 1000 lin. ft. crated; No. 9—900 lbs. per 1000 lin. ft. crated. 6, 7, 8, 9, 10 and 12 ft. long. Packed approximately 500 lin. ft. per crate.

MILCOR

Picture Mould and Base Screeds (With Expansion Wings)

(Patent Nos. 1,419,232 and 1,482,000)



No. 17 Expansion Picture Mould

Specification Data

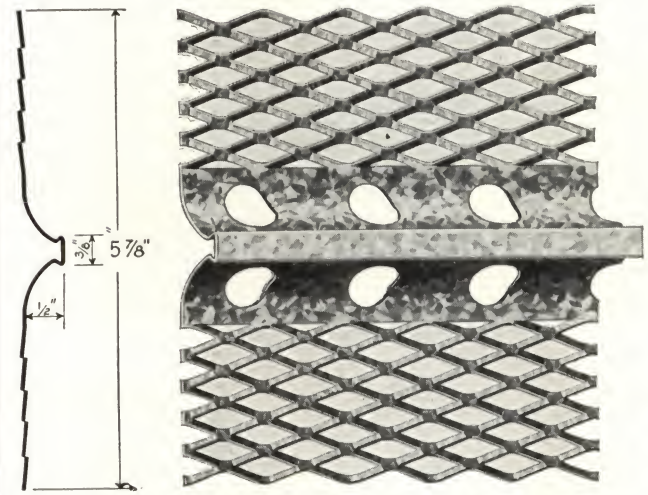
General Characteristics

Milcor Picture Mould with Expansion Wings—No. 17 has a wide metal surface flush with the plaster line. It is permanent, sturdy and sanitary, forming a rigid, dependable support for the heaviest decorations. The Expansion Wing forms a strong plaster reinforcement both above and below the moulding.

Materials, Weights, Etc.

Note: For complete description of materials, finishes, etc., see page 4.

SHEET STEEL, GALVANIZED; ARMCO INGOT IRON OR TONCAN IRON—26-GAUGE, GALVANIZED—400 lbs. per 1,000 lin. ft., 10 ft. long, crated. Packed approximately 500 lin. ft. per crate.



No. 18 Flush Base Screed with Expansion Wings

Specification Data

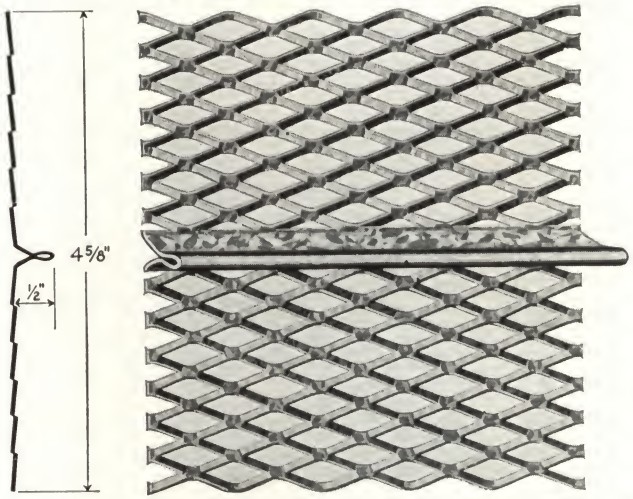
General Characteristics

This is a new type flush base screed with patented expansion wings. It is characterized chiefly by the wide flat nose which forms a dividing strip between plaster and flush cement base. Expansion wings reinforce both plaster and cement and guard against cracks.

Materials, Weights, Etc.

Note: For complete description of materials, finishes, etc., see page 4.

SHEET STEEL, GALVANIZED; ARMCO INGOT IRON OR TONCAN IRON, 26-GAUGE GALVANIZED—300 lbs. per 1,000 lin. ft., 10 ft. long, crated. Packed approximately 500 lin. ft. per crate.



No. 3 Expansion Base Screed

Specification Data

General Characteristics

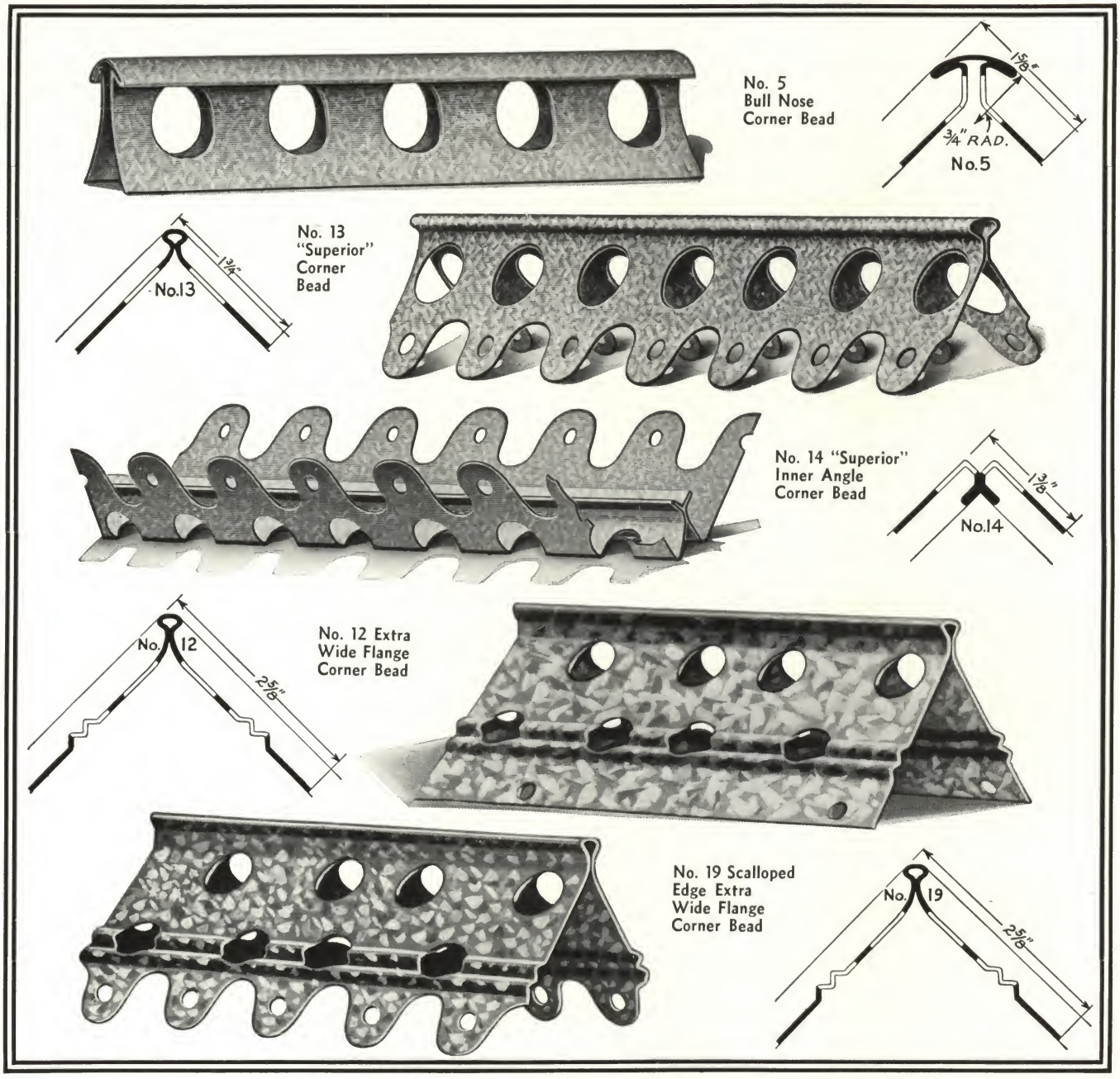
A firm, rigid metal dividing strip set between plaster and flush cement base with the advantages of 2¾-inch wings of strong mesh lath reinforcement against any possibility of cracks at juncture.

Materials, Weights, Etc.

Note: For complete description of materials, finishes, etc., see page 4.

SHEET STEEL, GALVANIZED; ARMCO INGOT IRON OR TONCAN IRON, 26-GAUGE GALVANIZED—230 lbs. per 1,000 lin. ft., 10 and 12 ft. long. Packed approximately 500 and 1,000 lin. ft. per crate. Also furnished in zinc and copper.

Old-Style Metal Corner Beads, Etc.



Note: For complete description of materials, finishes, etc., see page 4.

General Characteristics

For the less important work where cost is a prime factor and corner beads with the Milcor Patented Expansion Wings are not warranted, the Milcor Steel Company continues to manufacture a complete line of Old-Style Metal Corner Beads comparable in both material and design to the best of this type sold competitively.

No. 5 Bull Nose Corner Bead

MATERIAL—No. 26 and No. 24 gauge sheet steel.
LENGTHS—5, 6, 7, 8, 9, 10 and 12 feet.

APPROXIMATE WEIGHTS—No. 26 gauge—290 lbs. per 1,000 ft., crated; No. 24 gauge—410 lbs. per 1,000 ft., crated. Packed 500 and 1,000 lin. ft. per crate.

Nos. 13 and 14 "Superior" Corner and Inner Angle Beads

MATERIAL—No. 26 gauge sheet steel, galvanized.
LENGTHS—6, 7, 8, 9, 10 and 12 ft.
APPROXIMATE WEIGHT—220 lbs. per 1,000 ft., crated. Packed ten pieces of uniform length to the bundle; 500 and 1,000 ft. per crate.

No. 12 Extra Wide Flange Corner Bead and No. 19 Wide Flange Scalloped Edge Corner Bead

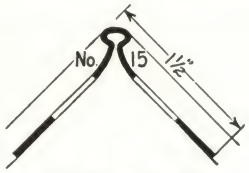
MATERIAL—Sheet steel, galvanized.
LENGTHS—6, 7, 8, 9, 10 and 12 ft.
APPROXIMATE WEIGHT—370 lbs. per 1,000 ft. Packed 500 ft. per crate.

MILCOR

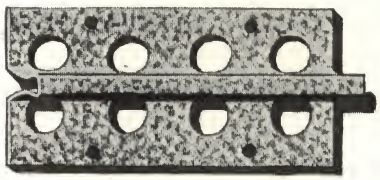
Old-Style Metal Corner Beads, Screeds, Etc.

(For Corner Beads with Expansion Wings, see pages 15 to 18)

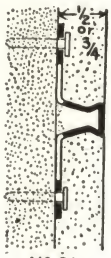
No. 15 "Milcor" Corner Bead



Profile of No. 15 Corner Bead



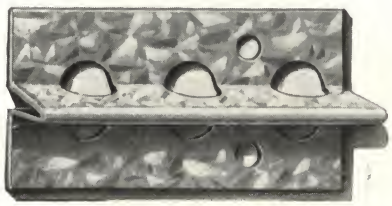
No. 61 Wide Nose Base Screed



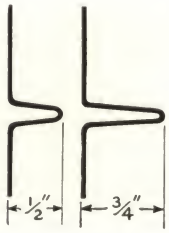
N° 61

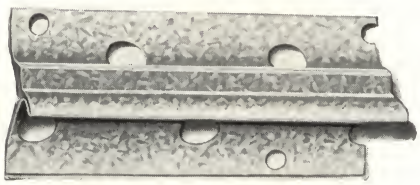
Hump Corner Bead Clip (Black Steel)

Universal Corner Bead Clip (Galvanized)

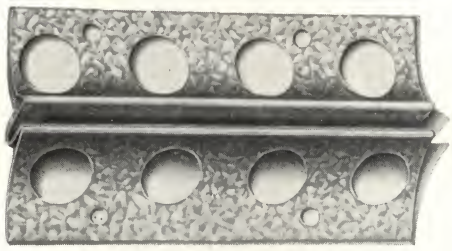


Plain Base Screed

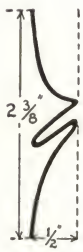




Curved Point Base Screed



Concealed Picture Moulding



No. 15 "Milcor" Corner Bead (Diamond)

MATERIAL—Sheet steel, galvanized.
LENGTHS—6, 7, 8, 9, 10 and 12 ft.
APPROXIMATE WEIGHT—185 lbs. per 1,000 ft., crated. Packed 500 and 1,000 ft. per crate.

No. 61 Wide Nose Base Screed

MATERIAL—Sheet steel, galvanized.
LENGTHS—9 and 10 ft.
APPROXIMATE WEIGHT—195 lbs. per 1,000 ft. crated.

No. 74 Plain Base Screed—½-inch and ¾-inch Grounds (⅝-inch Furnished if Desired)

MATERIAL—No. 26 gauge sheet steel, galvanized.
LENGTHS—10 and 12 ft.
APPROXIMATE WEIGHT—175 lbs. per 1,000 ft., crated. Packed 1,000 (10 ft.) and 1,008 (12 ft.) per crate.

Curved Point Base Screed

MATERIAL—No. 26 gauge sheet steel, galvanized.
LENGTHS—10 and 12 ft.
APPROXIMATE WEIGHT—195 lbs. per 1,000 ft., crated. Packed 1,000 (10 ft.) and 1,008 (12 ft.) per crate.

Concealed Picture Mould

MATERIAL—No. 26 gauge sheet steel, galvanized.
LENGTHS—10 and 12 ft.
APPROXIMATE WEIGHT—220 lbs. per 1,000 ft., crated. Packed 1,000 (10 ft.) and 1,008 (12 ft.) per crate.

Expansion Casings (For Doors and Windows)

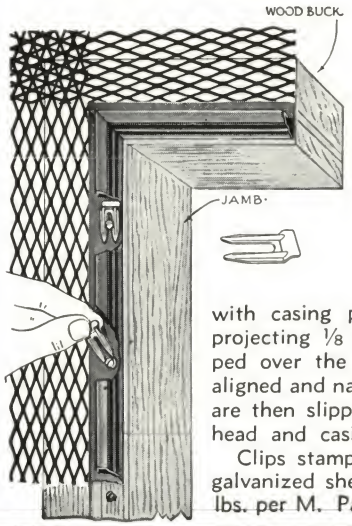
(For Expansion Feature, see page 4)

No. 6 O. G. Expansion Casing

Fabricated from tight coat galvanized open-hearth steel, Armco Ingot iron or Toncan iron. Lengths of 6, 7, 7½, 8, 9, 10 and 12 feet. Weight per 500 feet crated, 175 lbs. Patent No. 1,419,-232.

Furnished with either 3½ or 5-in. Expanded Metal Wings.

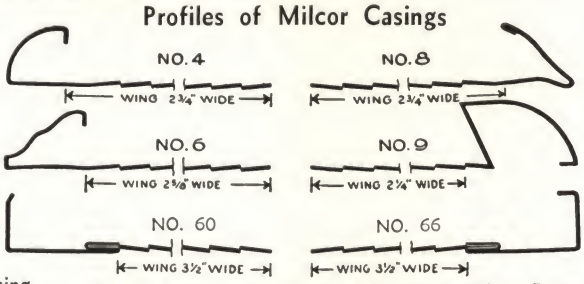
Expansion Casing Patent Locking Clip



The Milcor Casing Clip locks Casings firmly to the jamb. Casings are punched with $\frac{7}{16}$-in. round holes, 3 ins. on center. Round-head ¾-in. No. 10 or No. 12 screws are driven into the wood jamb customarily 12 in. apart to coincide with casing punchings with heads projecting ⅛ in. The casing is slipped over the screw heads properly aligned and nailed to the buck. Clips are then slipped between the screw head and casing and driven home.

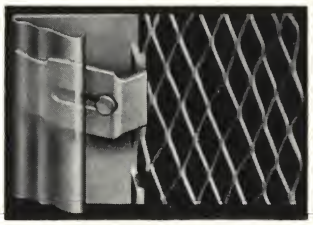
Clips stamped in one piece from galvanized sheet steel. Weight, 15 lbs. per M. Packed in cartons.

Profiles of Milcor Casings



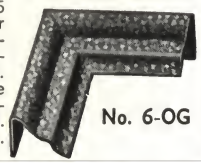
Casing Clip No. 2

The phantom view to the left shows Milcor Expansion Casing Clip No. 2 which can be used with all Milcor Casings and permits the nail to be placed where desired.



One-piece Miters for Expansion Casings No. 4, No. 6 and No. 9 for miter-joint reinforcement. Slip inside the casing. Stamped in one piece from galvanized sheet steel. Weight 80 lbs. per M.

One-piece Miters



No. 6-OG

Description

Milcor Expansion Casings, due to the 3½ or 5-in. expanded metal wings, provide a close permanent bond at the juncture of casing and plaster definitely eliminating any possibility of cleavage cracks—an outstanding practical advantage over the old style solid metal casings.

Compared with wood architraves, their fireproof and sanitary advantages are obvious.

From the viewpoint of economy as compared to wood architraves, their initial cost is somewhat less—the installation labor cost is much less.

Architecturally, they add a pleasing note of simplicity to both the door and window treatment quite in line with modern trends.

Specification Data

Designs

Made in six designs—No. 4, Quarter Round; No. 6—O.G.; No. 8—O.G.; No. 9, Special Quarter Round, and Styles Nos. 60 and 66, as shown in cross sections above.

Styles Nos. 60 and 66 are made with and without Expansion Wings in both 20 and 24-gauge metals, with ½, ⅝ and ¾-in. grounds.

Materials

SHEET STEEL, GALVANIZED—Nos. 4, 6, 8 and 9 cut from 24-gauge sheets. Nos. 60 and 66 cut from 20 and 24-gauge sheets.

ARMCO INGOT IRON OR TONCAN IRON, GALVANIZED—Cut from 24-gauge sheets.

PURE ZINC—Cut from No. 12 sheets.

COLD ROLLED COPPER—Cut from 16-oz. sheets.

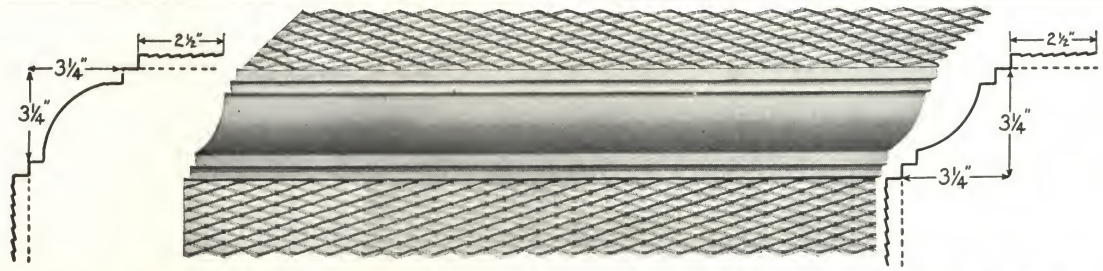
Lengths and Weights

7, 7½, 8, 9, 10 and 12 ft. long. Weight of designs No. 4, Quarter Round, No. 6—O.G.; No. 8—O.G.; and No. 9, Special Quarter Round—200 lbs. per 500 lin. ft., crated.

Weights of Styles

	24-gauge	20-gauge	
No. 60 (with Expansion Wings) . .	440	600	Lbs. per 1000 lin. ft.
No. 66 (with Expansion Wings) . .	460	620	
No. 60 (without Expansion Wings)	210	280	
No. 66 (without Expansion Wings)	240	320	

Expansion Cornice Lath



In its Expansion Cornice Lath, Milcor has perfected a new Metal Cornice which may be permanently keyed to the plaster on wall and ceiling by means of expanded metal wings. Being made of metal this cornice cannot warp or crack. Milcor Expansion Wings on each side prevent the development of cracks at juncture of wall and ceiling.

A simple and effective method of joining sections has been developed through the use of a splice plate similar to that made for joining metal bases. When properly painted the joint is practically invisible.

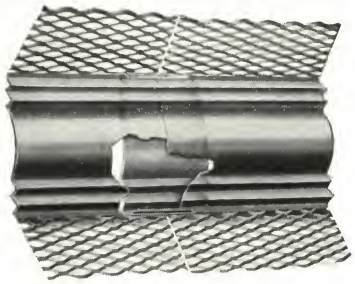
Inside and outside miters for Milcor Expansion Cornice Lath are made at the factory to insure perfection. They are joined to sections with splice plates. See illustration on page 2 showing Cornice Lath and Miters.

Designs

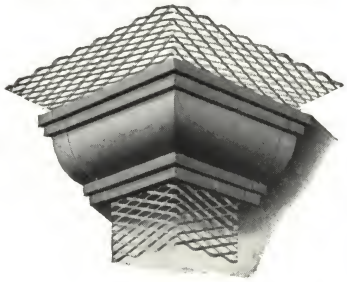
Milcor Expansion Cornice Lath is made in two styles, convex and concave. Lead-coated terne sheets are used which will receive and hold paint to harmonize with walls and ceiling.

Lengths and Weights

Stocked in 10 ft. lengths only.
Weight of 500 ft. crate—300 lbs.
Packed 500 ft. per crate.



Splice Plate for Joining Sections



Miter

Corner Lath

Lath Strip

MILCOR
Diamond-Mesh Expanded Corner Lath
(FOR INNER CORNERS AND CEILING ANGLES)
and Lath Strips

Specification Data

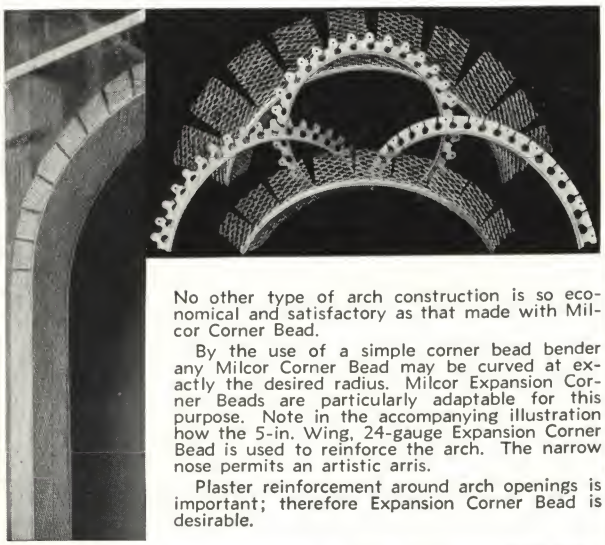
General Characteristics

Milcor Corner Lath consists of strips of Netmesh (see page 4) ⅜-in. diamond expanded lath with finished edges—not rough or ragged. Required as reinforcing over all re-entrant angles over wood or rib metal lath where inner angle bead is not used for the same purpose.

SIZES—Corner Lath have 3 and 4-in. wing width and are 8 ft. long. Lath Strips are 3, 4 or 6 ins. wide and 8 ft. long. Packed approximately 500 lin. ft. per crate.

MATERIALS—Sheet steel, painted or galvanized; copper alloy steel; Armco Ingot Iron or Toncan Iron, painted or galvanized.

Metal Arches



No other type of arch construction is so economical and satisfactory as that made with Milcor Corner Bead.

By the use of a simple corner bead bender any Milcor Corner Bead may be curved at exactly the desired radius. Milcor Expansion Corner Beads are particularly adaptable for this purpose. Note in the accompanying illustration how the 5-in. Wing, 24-gauge Expansion Corner Bead is used to reinforce the arch. The narrow nose permits an artistic arris.

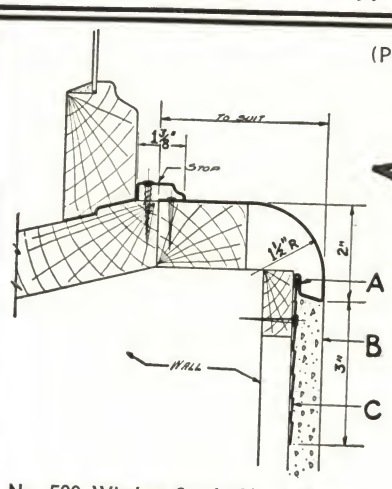
Plaster reinforcement around arch openings is important; therefore Expansion Corner Bead is desirable.

Window Trim and Stools -- No. 500 Series

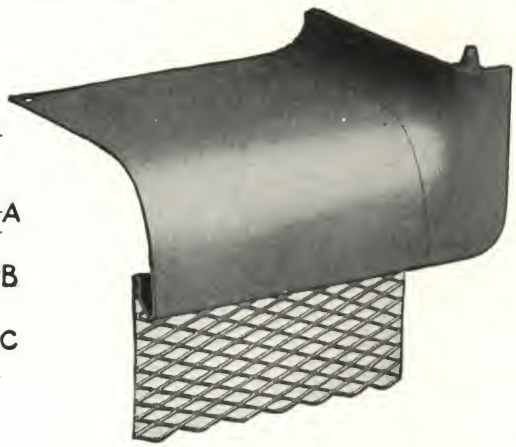
No. 500—With Expanded Metal Flange No. 501—With Standard Flange
No. 502—With Movable Nailing Clip

(See Three Types of Flanges in diagram below in center of page)

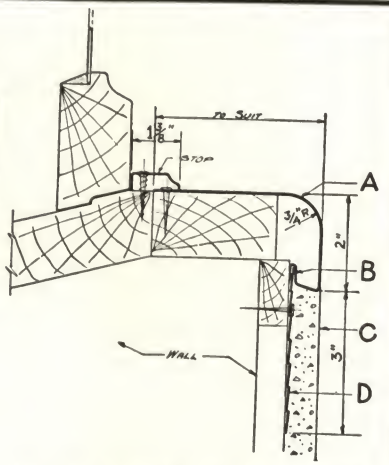
(Patents Applied For)



No. 500 Window Stool 1½-in. Radius
A—Expanded Metal Seamed on Stool
B—Plaster Line
C—Expanded Metal Wing



No. 500 Window Stool with 500-H Fitting 1½-in. Radius



No. 500 Window Stool ¾-in. Radius
A—Bull Nose Corner Bead at Ends
B—Expanded Metal Seamed on Stool
C—Plaster Line
D—Expanded Metal Wing

Description

General Characteristics

Milcor No. 500 Series Trim and Stools provide suitable construction for modern public buildings, schools, hospitals, institutions, hotels, apartments, offices and industrial buildings. The natural qualities of the metal surface provide sanitation, fire safety and attractive appearance while the Expansion Wing offers permanent protection against cracks and cleavage.

Types

Curved Metal Window Trim No. 500 is made in two sizes, one with a ¾-in. radius and one with a 1½-in. radius. Cross section diagrams of each of these sizes (shown above) are exactly one-half actual size.

This Window Trim may be used as a Window Stool in connection with other Milcor Products or as complete trim for the window.

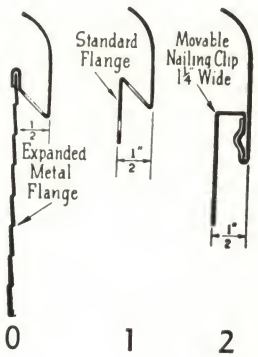
Stool Variations

PLASTER JAMBS—The No. 500 ¾-in. Radius Stool is provided with fittings so that a No. 10 Bull Nose Expansion Corner Bead (see page 15) may be substituted for the metal jambs and head, providing a bull nosed angle plaster jamb.

WOOD JAMBS—The No. 500 ¾-inch Radius Stool may likewise be combined with wood jambs and No. 4 (Quarter Round) Expansion Casings (see page 20).

FLAT STOOL—Either the No. 500 ¾-in. Radius or 1½-in. Radius Metal Jamb and Trim may be used in conjunction with the Milcor Flat Metal Window Stool shown on page 24.

Three Types of Flanges



All flush type bases and window stools are available with three different types of metal flanges as shown. Each type is designated by the suffix indicated

Specification Data

Materials

TRIM—Sheet steel galvanized and primed with a special gray primer for subsequent painter's finish.

FITTINGS—Best grade of gray cast iron, sand blasted, machined, and primed.

Gauges

20, 18, 16, 14 and 12 gauge as specified. Stools lighter than 14 gauge should be cement mortar grouted. Specify at least 18 gauge for stools with reveal widths up to 4 in. and up to 5 ft. in length—for greater reveal width and length, specify 16, 14 or 12 gauge as best suited to the type of building.

Lengths

Lengths from 1 ft. up to 10 ft. in multiples of 6 in. Lengths over 10 ft. furnished with a splice.

Fabrication

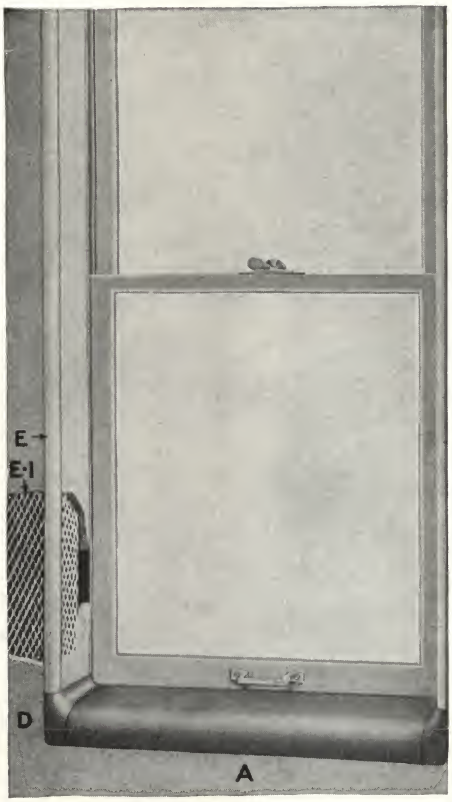
When assembled in our shop the fittings are electrically welded to the trim. They are welded from the under side only. This makes a neat, exceedingly strong unit in which the exposed surface of the trim is not marred by bolt heads. When shipped for field assembly the trim is first set up in our shop by means of countersunk bolt connections and then knocked down for shipment. We strongly recommend shop assembly for strength and neatness.

MILCOR

Curved Metal Window Trim and Stool

No. 500 Series

FITTINGS FOR NO. 500 WINDOW TRIM AND STOOL



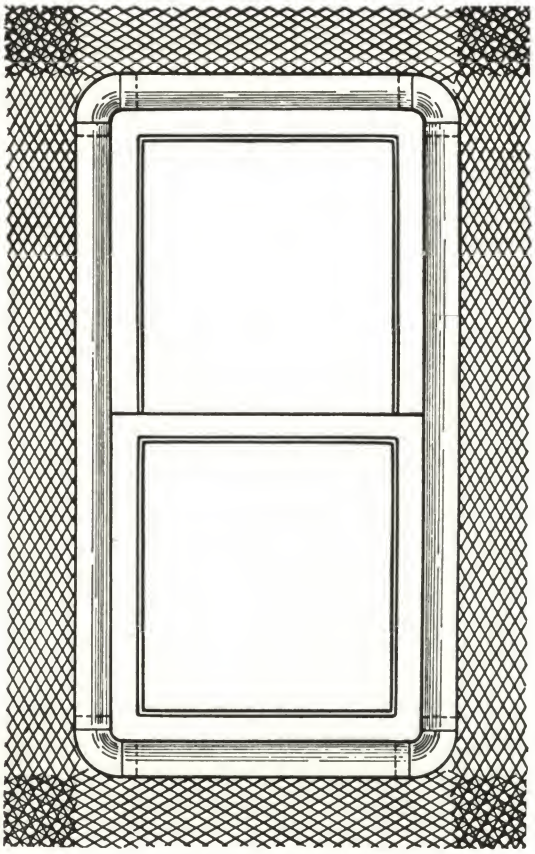
"A"—No. 500 Curved Stool; "D"—Left End Fitting, "E"—¾-in. Nose of Bull Nose Expansion Corner Bead No. 10; "E-1"—Expanded Metal Wings of Bead

Used As Stool or Complete Trim

Sketch at right shows No. 500 Window Stool and Fittings used as a complete window trim. Fittings Nos. 50-A and 50-B (¾ and 1½-in. radius respectively) may be used for this purpose.

Fittings Nos. 50-C and 50-D are right and left respectively for a 1½-in. radius stool with a ¾-in. radius trim. These fittings will permit the use of a ¾-in. trim all around the window except the stool which may be ½-in. radius.

Other variations may be made with the use of Milcor Casing and Bull Nose Corner Bead.



No. 500 Window Stool and Fittings

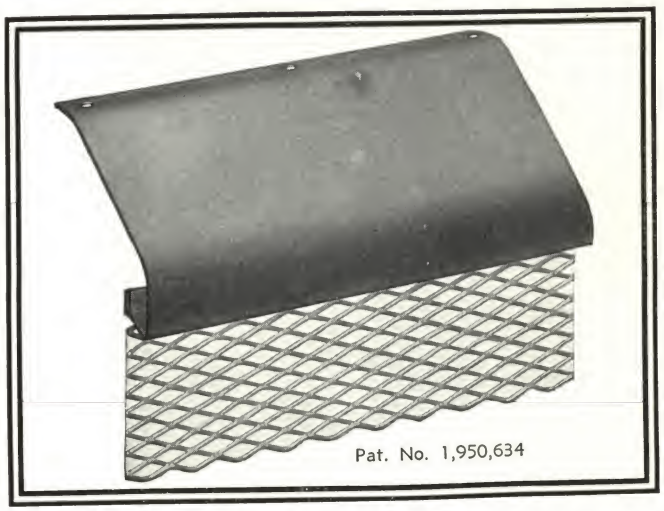
Splay Window Stools
No. 510 Series

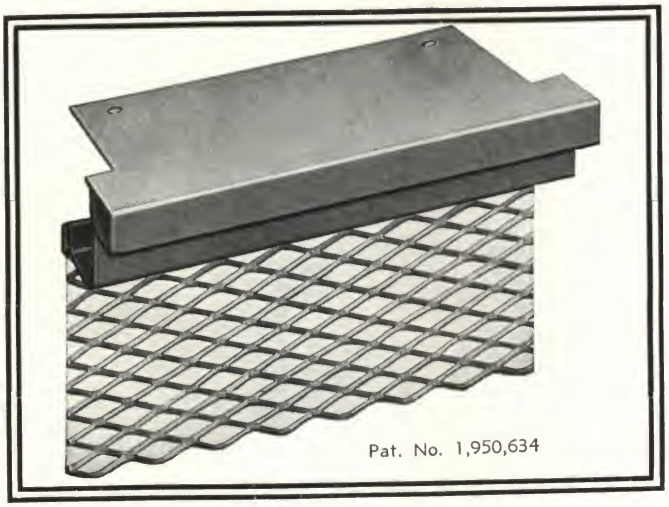
No. 510—With Expanded Metal Flange
No. 511—With Standard Flange
No. 512—With Movable Nailing Clip

Flat Window Stools
No. 520 Series

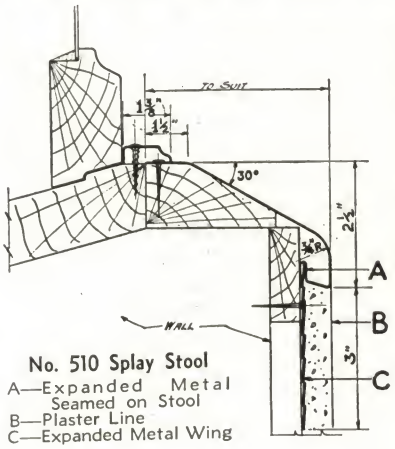
No. 520—With Expanded Metal Flange
No. 521—With Standard Flange
No. 522—With Movable Nailing Clip

(See diagram showing flanges on page 22)

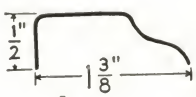




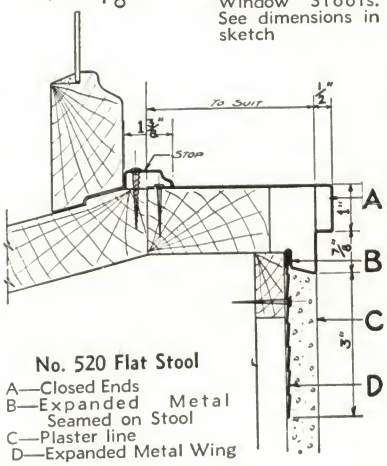
This substantial Splay Metal Window Stool will be found practical and acceptable in places where flat or curved Window Stools are not desired. More light will be admitted to a room (where walls are thick) when a Window Stool of this type is used. The angle of the Splay (see sketch) prevents this stool being used as a shelf. Cross section diagram is exactly ½ size. See page 4 for general specifications. Note use of No. 703 Window Stop.



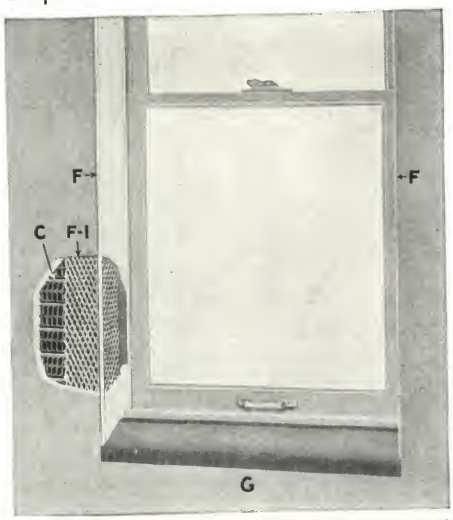
No. 510 Splay Stool
A—Expanded Metal Seamed on Stool
B—Plaster Line
C—Expanded Metal Wing



No. 703 Window Stop
For use on all Milcor and Richsto Window Stools. See dimensions in sketch



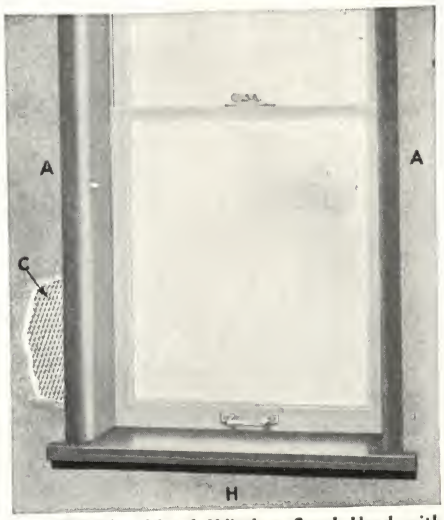
No. 520 Flat Stool
A—Closed Ends
B—Expanded Metal Seamed on Stool
C—Plaster line
D—Expanded Metal Wing



Milcor Splay Metal Window Stool No. 510 with Expansion Corner Bead No. 1, used as trim
"G"—No. 510 Splay Stool; "F"—Nose of Expansion Corner Bead No. 1 in plaster-reveal; "F-1"—Expanded metal wings of Expansion Corner Bead; "C"—Milcor Stay-Rib Metal Lath No. 1

The No. 520 Series Flat Window Stool is made for ½, ⅝ and ¾-in. grounds as specified. Closures for the ends are furnished without extra charge. Cement grouting is recommended for good construction.

No special fittings are required to connect the jambs with this stool as the jambs rest on the flat surface of the stool. Milcor Bull Nose Expansion Wing Bead No. 10, or No. 1 mitered to fit, makes the most desirable jamb. This Window Stool may be applied with Metal Window Trim No. 500.



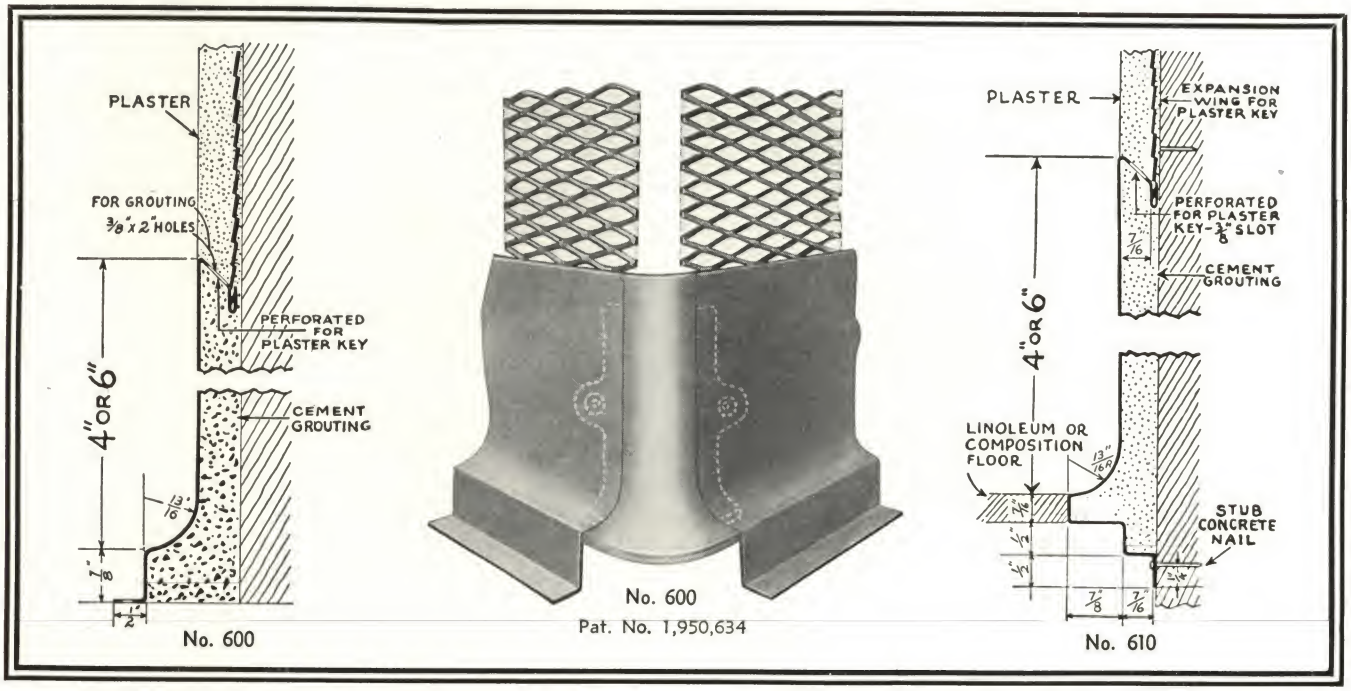
No. 520 Flat Metal Window Stool Used with No. 500 as Trim
"H"—No. 520 Flat Metal Window Stool; "A"—No. 500 Curved Stool used as trim; "B"—No. 500-A and B Corner Fittings; "C"—Expansion Wing attached to No. 500 Window Trim

MILCOR

Flush Metal Bases Nos. 600 and 610 Series

(Patents Applied For)

Furnished with three types of Plaster Flanges the same as Metal Window Stools (see page 22). Base Flanges identified by Suffixes "O," "1" and "2" in manner similar to Window Stools.



Description

General Characteristics

Milcor Metal Bases with Patented Expansion Feature (see page 4) overcome definitely any possibility of cleavage at the juncture between the top of the base and the plaster wall. In addition the expanded metal wing thoroughly reinforces the plaster at the most vital point. Grout fill is easily installed through the slotted (3/8 in. x 2 in.) top after the base is erected.

The base is furnished with a complete line of flush fittings for angles, plinths, splices, end stops, etc. In addition to its attractive appearance, its sanitary and fireproof characteristics adapt it ideally to use in public buildings, schools, hospitals, institutions, hotels, and commercial buildings. See illustration on page 2 showing interior with No. 600 Base and Fittings.

Types

All Milcor and Richsto Metal Bases except the removable type are available with any of three types of Metal Flanges for fastening the base to the wall. Cross section views of Expanded Metal Flange, Standard Flange and Movable Nailing Clip are shown in sketch on page 22. Flange desired should be clearly specified. If no specification is made, Standard Flange will be furnished.

The Metal Bases in the 600 and 610 groups are numbered 601 and 611 because they have the standard flange. No. 602 has exactly the same contour but utilizes the movable nailing strip for attaching to the wall.

The 610 Series is identical with the 600 Series except that the lower end is attached to the wall instead of to the floor. Bases in this series are as follows:

No. 610 (with Expanded Metal Flange)
No. 611 (with Standard Flange, illustrated)
No. 612 (with Movable Nailing Strip).

Specification Data

Materials, Gauges, Etc.

Note: For complete description of materials, finishes, etc., see page 4.

BASE—Sheet steel galvanized and primed with a special gray primer for subsequent painter's finish.

FITTINGS—Best grade of smooth gray cast iron, sand blasted, machined, and primed.

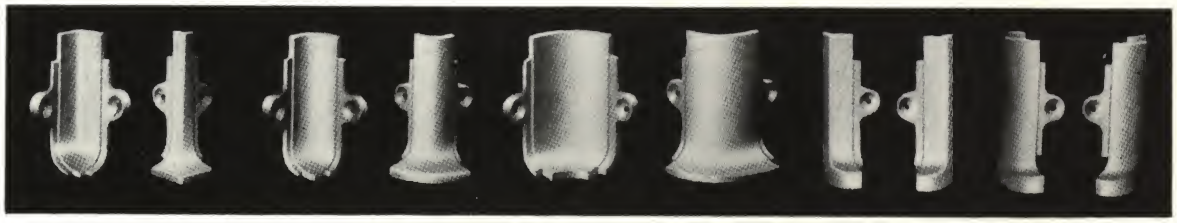
Gauges and Lengths

20 and 18 gauge; length, 10 ft.

Installation

The base should be installed with the use of special tools which may be rented from the manufacturer, consisting of a specially designed miter box saw and a special punch for aligning the holes in base to fit accurately the holes in fittings. Base and fittings are bolted together—exposed flat head bolts are counter-sunk.

MILCOR Flush Metal Bases



Four and Six-inch Fittings for Nos. 600 and 610 Series

(Read left to right in above illustration)

No. 600-A Square. Inside cast iron corner.
No. 600-B Square. Outside cast iron corner.
No. 600-C ¾-in. radius. Inside cast iron corner.
No. 600-D ¾-in. radius. Outside cast iron corner.
No. 600-E 1½-in. radius. Inside cast iron corner.
No. 600-F 1½-in. radius. Outside cast iron corner.
No. 600-H Left hand. End stop cast iron.
No. 600-J Right hand. End stop cast iron.
No. 600-M Right side. Plinth cast iron for No. 4 casing.
No. 600-N Left side. Plinth cast iron for No. 4 casing.

Milcor Corner Fittings for right angles both external and internal, as well as terminating points of base part, are furnished as illustrated in this book. Special angles should be taken care of by mitering or coping. Special fittings for odd usages or unusual corners may be furnished if a sufficient number is required to justify patterns. As a rule, however, special angle corners on any job may be made by a skilled workman when the base is being installed.

MILCOR Removable Metal Bases No. 644

For Existing Buildings

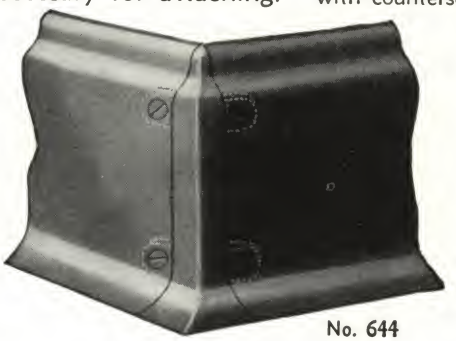
The Milcor Removable Base No. 644 may be used with equal success in new or old buildings. The application of these bases is comparatively simple and their use enhances the appearance of any interior. They are a very important factor in modernizing old buildings.

This type of metal base is economically installed because it may be applied after the plastered wall and the flooring have been completed. One or two wooden plaster grounds in the wall, as required according to the type of base used, are necessary for attaching. The design of the base makes a furring strip unnecessary. The bottom flange holds the base in proper position from the wall.

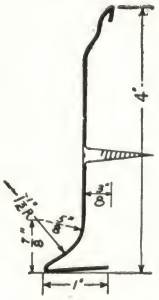
The 4-in. base is attached to the wall by a single screw in the center of the base. Fittings in both the 4- and 6-in. bases are applied with screws at top and bottom. Although screws at top and bottom of the 4-in. base are considered unnecessary except in connection with fittings, they may be used if desired and the base punched accordingly on the job.

Specification Data

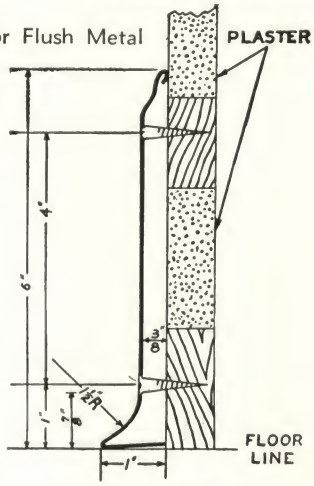
Same as given on page 25 for Flush Metal Bases, except that base is attached to fittings with countersunk machine screws and the base is attached to wood grounds (1½ or 2 in. wide) with countersunk wood screws.



No. 644



4-in. base



6-in. base

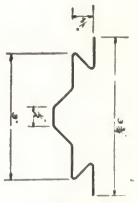
MILCOR

MILCOR CHAIR RAIL NO. 760

for SCHOOLS, OFFICES and PUBLIC BUILDINGS

Metal Chair Rails keep furniture from disfiguring the plastered walls and also form the top of a wainscot. They are quite necessary in schools and public buildings of all kinds.

Made from 20 gauge Steel, gray primed, and furnished in 10 ft. lengths. No. 10, ⅜-in. flat head machine screws furnished for attaching cast iron fittings.

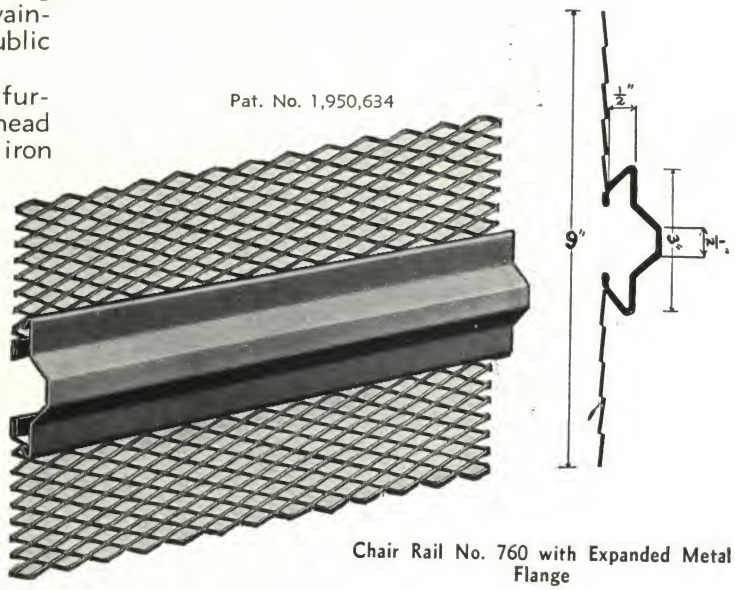


Profile View of Chair Rail Without Expansion Wings

FITTINGS FOR NO. 760 SERIES CHAIR RAILS

No. 760-A—¾-in. radius. Inside cast iron corner.
No. 760-B—¾-in. radius. Outside cast iron corner.
No. 760-C—1½-in. radius. Inside cast iron corner.
No. 760-D—1½-in. radius. Outside cast iron corner.
No. 760-E—Square. Outside cast iron corner.
No. 760-F—Square. Inside cast iron corner.
No. 760-I—Right end. End stop cast iron.
No. 760-J—Left End. End stop cast iron.

Pat. No. 1,950,634



Chair Rail No. 760 with Expanded Metal Flange

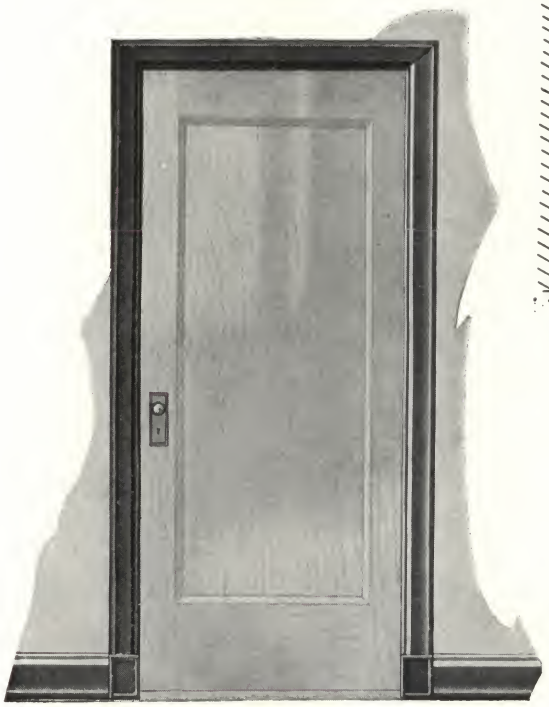
MILCOR CASING NO. 645

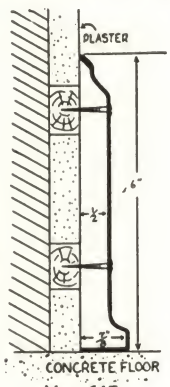
for DOORS and WINDOWS

In addition to its use as a metal base the No. 645 may be used as door or window casing. The window installation shown below depicts this casing used in conjunction with No. 524 Window Stool. Note also in this illustration the use of the No. 645 as a wall base, the combination of casing and base producing an interior effect of considerable merit.

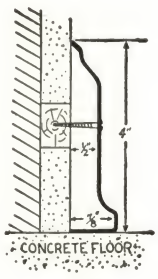
The width of the No. 645 Casing is 4 in. Made from 20-gauge Steel, gray primed, and furnished in 6, 7, 7½, 8, 9 and 10 ft. lengths.

Casing No. 645 is mitered on the job.



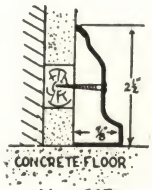


No. 645
6-in. Base

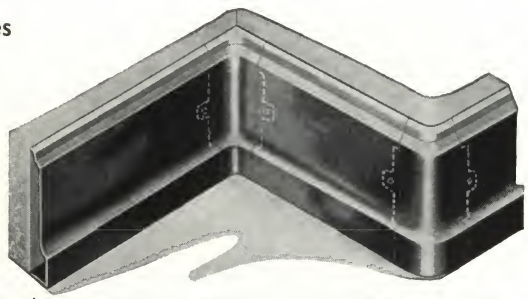


No. 645
4-in. Base

Cross Section Profiles



No. 645
2½-in. base



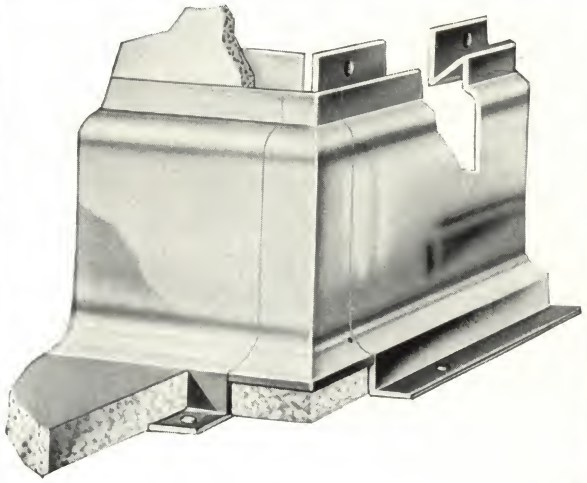
Complete construction assembly of 645 Base with corner fittings—outside round, inside square corner

NO. 620 METAL BASE

(See Page 25 for Plaster Flange Information)

Projecting Type

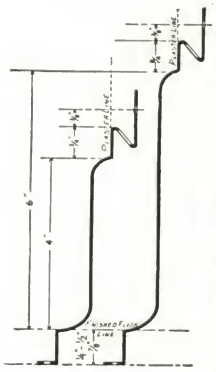
No. 620—With Expanded Metal Flange
No. 621—With Standard Flange (Illustrated)
No. 622—With Movable Nailing Clip



Richsto Metal Base No. 620
Projecting Type

Above:
Complete assembly of No. 620 Richsto Base showing an outside corner construction and methods of attachment to wall and floor

At Right:
Sectional view of No. 620 4-in. base and No. 620, 6-in. base. Depth of bottom flange, 7/8 in., unless otherwise specified. Can be furnished any depth



Description

The No. 620 style of base design appeals to many architects and designers because the projection of the base out from the plaster line gives an additional trim effect to the room. The old wood base had to be installed in front of the plaster line and many persons are used to and prefer this appearance.

The No. 620 design is just as practical as other flush-with-plaster type metal bases. Diagram shows dimensions of both 4-in. and 6-in. styles exactly one-half actual sizes.

Specification Data

Same as given on page 25 for Flush Metal Bases.

Most Milcor and Richsto Metal Trim Products are available with any of three different types of Metal Flanges for fastening the trim to the wall.

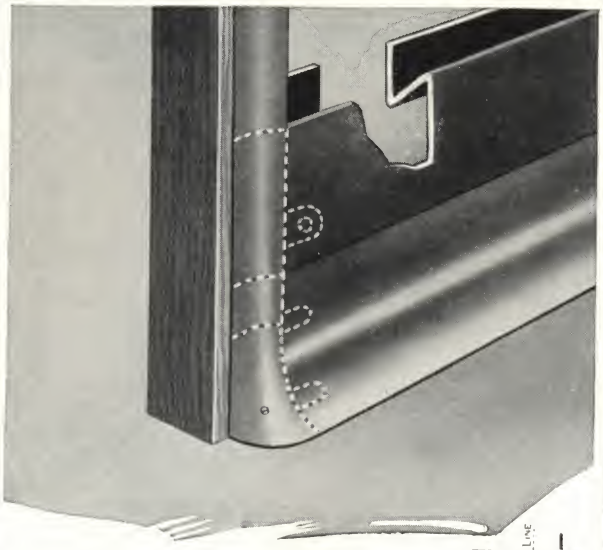
Obviously the most practical of these is the Expanded Metal Flange which in many cases is formed as an integral part spot-welded to the exposed moulding. The advantage of this expansion flange lies principally in its function as a permanent plaster bond whose network of expaded steel prevents checking and cracking of plaster at the vulnerable points.

NO. 630 METAL BASE

(See Page 25 for Plaster Flange Information)

Adjustable Flush Type

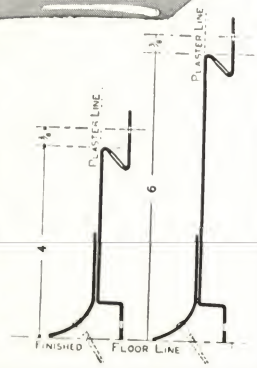
No. 630—With Expanded Metal Flange
No. 631—With Standard Flange (Illustrated)
No. 632—With Movable Nailing Clip



Richsto Metal Base No. 630
Adjustable Flush Type

Above:
Complete construction detail of No. 630 Base with No. 630 Plinth

At Right:
Profile detail of No. 630 Base. Lower member of this base will be furnished for either concrete or wood floor



Description

Bases in the 630 Series are especially suitable for wood or Linoleum floors. The bases are of the Flush type and are provided with an adjustable bottom cove mould. Where base is applied before plastering, the Cove member is either raised or removed so that the form may be laid under it. The lower part of the base may be erected after plastering and after the floor is laid by the use of wood screws as shown in detail below. Necessary 1 in. No. 5 wood screws are furnished for the cove of this base. Special lock screws make it possible to tighten this cove member from time to time. This assures the tight base even under conditions of shrinking or settlement of the floor.

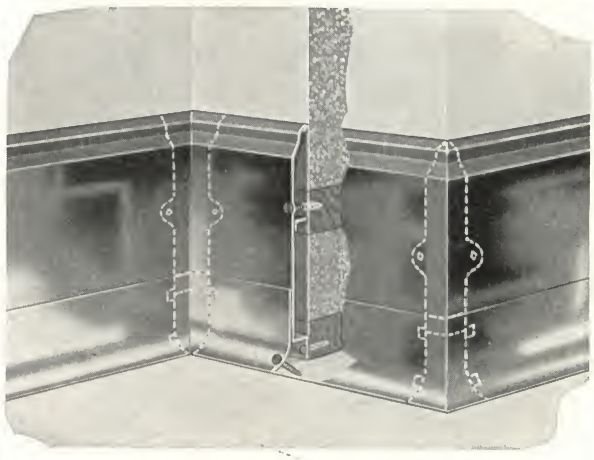
Specify whether base is to be used for cement or wood floor, so proper lower cove will be furnished. Note different construction in diagrams.

Specification Data

Same as given on page 25, except that cove section may be erected after floor is laid.

NO. 643 METAL BASE

Adjustable Offset Type

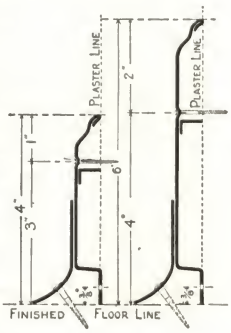


Above is pictured complete construction and erection detail for No. 643 Base.

Dotted white lines show inside and outside corner fittings. These fittings conform perfectly to the contour of the base itself so they are practically invisible in the completely installed and painted metal base.

Profile construction of erection of No. 643 base in both 4-in. and 6-in. types. Nailing Grounds may fasten the cove element to the wall or to the floor. Lower member of this base can be furnished for either concrete or wood floor.

Note the welded furring strips which do away with the necessity of wood furring. Plenty of space is afforded behind the base for running concealed telephone wires.



General Characteristics

This adjustable type base is used frequently with wood or linoleum and is especially designed for use in construction where shrinkage or settlement is likely to be excessive. It is favored by many where wooden joint construction is used; and also finds frequent application in office buildings because of affording opportunity to run telephone wires around a room, concealed behind the base. The adjustable Bottom Cove Member makes it highly desirable for wood or linoleum floors. This base is applied after plastering.

Inasmuch as the lower part of the base itself and also the lower coves are made differently for wood floors than for concrete floors, it is important to specify the type of floor to be used.

Types

Made in 4-in. and 6-in. sizes. See diagrams giving dimensions.

NO. 654 COVE MOULD

For Remodeling Old Buildings

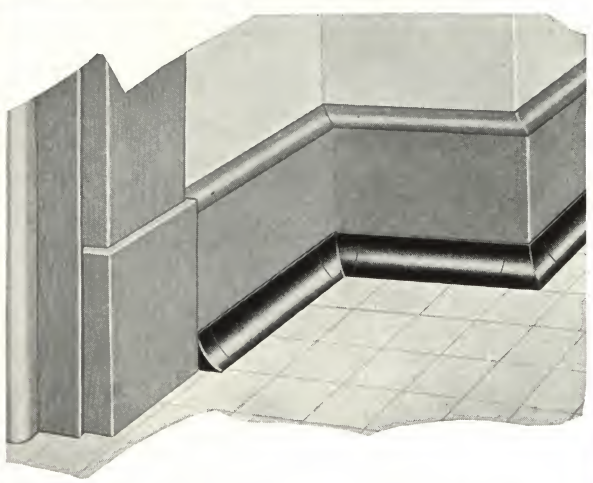
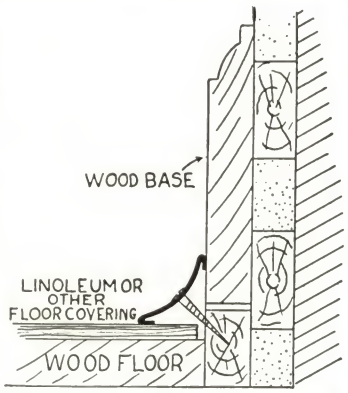


Illustration of complete installation of No. 654 Cove Mould. Note the fittings which match the contour of the mould perfectly. Inside and outside fittings are furnished in both square cornered and round cornered styles. Splice plates join sections to insure perfect alignment.

Profile view to the right shows the adaptability of the No. 654 Cove Mould for remodeling old buildings. This mould eliminates cracks and openings where wood shrinkage has taken place.



General Characteristics

This type of Cove Mould has many uses. It is quickly installed and moderate in cost. Frequently it is used in connection with wooden bases already installed. It is especially adapted for use with wood floors but is equally well suited for use over linoleum or carpet.

Types

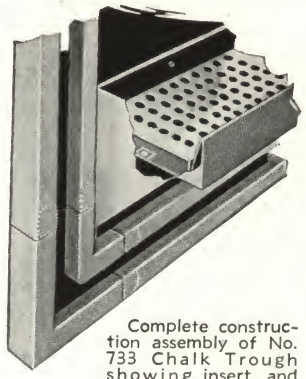
Cove No. 654, 2- and 3-in. sizes, made in 24-gauge steel with gray priming coat. Furnished with No. 5, 1¼-in. oval head wood screws.

All Milcor Coves and Moulds are also made in brass, aluminum and stainless steel.

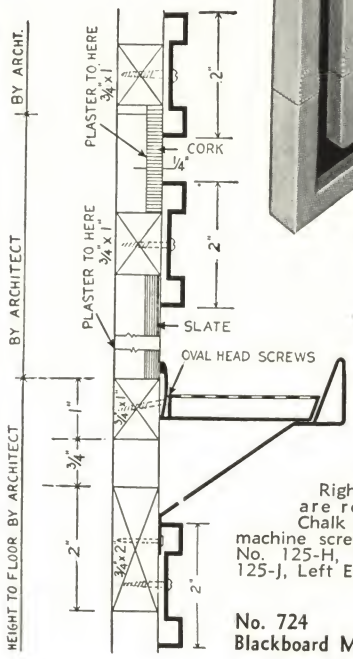
Specification Data

Installed with wood screws right over old floor and wood base. Complete set of cast fittings furnished.

NO. 733 METAL CHALK TROUGH



Complete construction assembly of No. 733 Chalk Trough showing insert, and End Stop; also No. 724 Mould.



Richto No. 733 Chalk Trough

Right and Left End Stops are required for No. 125 Chalk Trough attached by machine screws which we furnish. No. 125-H, Right End Stop. No. 125-J, Left End Stop

No. 724 Blackboard Mould

Drawing shows cross section of Richsto Metal Chalk Trough used in conjunction with No. 724 Blackboard Mould. The No. 724 Blackboard Mould is so designed that it can be adapted to practically any structural requirement. A complete line of fittings is furnished, including corners, end pieces, tees and crosses.

General Characteristics

These Chalk Troughs and Blackboard Moulds provide the advantages on pre-fabricated metal construction in addition to the practical features of the special Richsto design which permit a wide variance of application. The Perforated Screen Insert (No. 733) is furnished in 3, 4, and 5-ft. lengths, and may also be used in wood troughs.

Specification Data

Materials, Gauges, Etc.

Made of 24-gauge tight coated galvanized sheet steel. Exposed surfaces primed with special gray primer.

Lengths

Furnished in 6, 8 and 10-ft. stock lengths. Splices furnished to extent of one per 12 ft. of Chalk Trough.

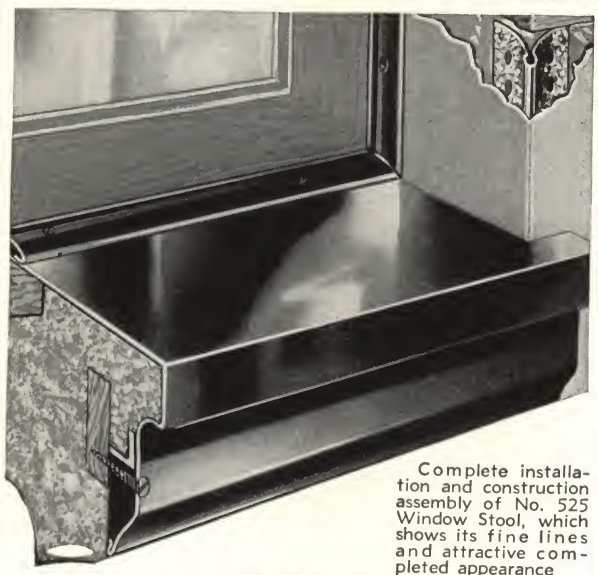
Installation

No. 5, ¾-in. oval head wood screws furnished for attaching upper flange to wood grounds. Right and left stops are attached with machine screws.

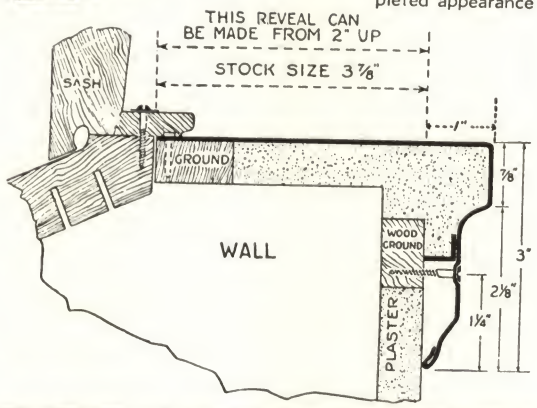
Fittings

No. 733-H—Right End Stop.
No. 733-J—Left End Stop.

NO. 525 WINDOW STOOL—NEW STYLE



Complete installation and construction assembly of No. 525 Window Stool, which shows its fine lines and attractive completed appearance



General Characteristics

No. 525 Window Stool may be installed either before or after plastering. It is a wide deep stool, artistic in design. Has 1-in. projection beyond plaster line. Furring strip is welded to apron and reinforces it. 1½-in. No. 5 wood screws are furnished for the apron. Stool is simple in design, easy to erect, and exceptionally pleasing in its finished effect. Ends are closed with 20-gauge galvanized steel. Can be furnished in any reveal 2 in. or more.

Specification Data

Note: See page 22 for general data on Materials, Gauges, Lengths and Fabrication.

Installation

Stools should be filled at time of setting with cement or mortar. Installation can be made either before or after plastering, which depends upon the construction.

MILCOR

METAL CASING MOULDS

No. 705 No. 704

No. 706

Metal Casing Moulds

These moulds find many applications in connection with metal casings. By having the casings a separate unit from the mould, building vibration is broken up and sudden jars from slamming doors are not transmitted to the plaster.

No. 705—Casing Mould, 20-gauge steel, ¾ in. wide. Can be used wherever No. 706 Mould is used. Offers features of economy.

No. 704—Mould, 24-gauge steel, ⅞ in. wide. Used as an alternative for No. 706 Mould.

No. 706—Mould, 20-gauge, $\frac{11}{16}$ in. wide. Generally used with casings.

Screw hole space 11 in. on centers; necessary screws furnished on above.

Standard Lengths: 6 ft., 7 ft., 7 ft. 6 in., 8, 9, 10 and 12 ft.

NO. 65 CORNER GROUNDS

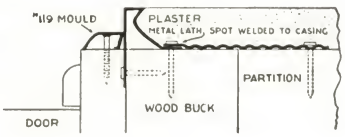
No. 65 No. 65 with Expansion Flange

Corner Grounds

The two types of corner grounds illustrated are sanitary, easily installed, low priced and meet a very real demand.

No. 65 Corner Grounds. Made in 26-gauge and 24-gauge steel. Flange 1¼ in.

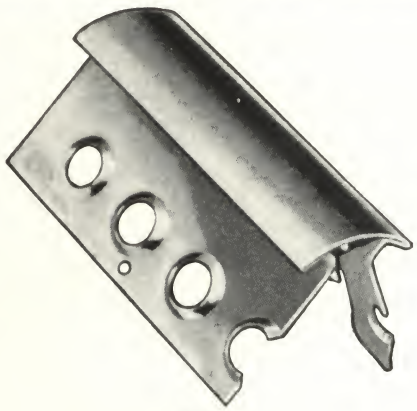
No. 65 Corner with Grounds-Expansion Flange. Made in 26-gauge and 24-gauge steel.



CORNER BEADS

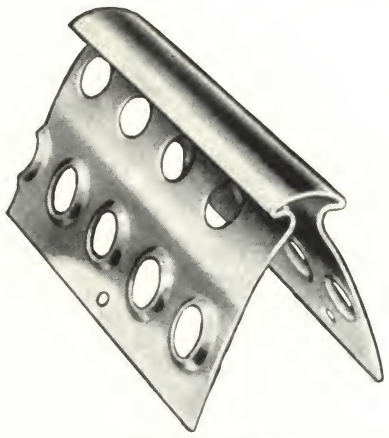
No. 53

Bull Nose Bead. 1½-in. radius, 26 or 24-gauge. 1¾-in. length of flange. Richsto No. 123 Clip required. Clips extra.



No. 44

Bull Nose Bead. 1½-in. radius, 24 or 26-gauge. Improved long flange 3 in. Cone shaped perforations form a perfect key.



Nos. 31 and 41

No. 31 Bull Nose Bead. ¾-in. radius, 24-gauge. Length of flange 3 in. Cone shaped perforations form a perfect key. No. 310—reinforced nose—same specifications as No. 31 except for 20-gauge reinforced nose.

No. 41—Same as No. 31, except 26 gauge.

Standard Lengths: 6, 7, 8, 9, 10 and 12 ft.

MILCOR Silvercote Insulating Plaster Base

For details of Silvercote Insulation, see catalog of Silvercote Products, Inc.

This modern combination insulation and plaster base development consists of highly reflective, corrosion-proof insulation combined with Milcor metal lath—the recognized plaster base.

The purpose, advantages and practical application of this duplex medium are best appreciated after a study of the thermal principles involved.

The Principles on Which the Insulation Value of Milcor Silvercote Is Based

The function of reflective insulation is to **reflect** or **rebound** heat at the surface of the material, thus permitting as little as possible to pass through. For this reason the thickness of a reflective material is not a factor in its insulation value, as long as it is strong enough to be practical in construction work.

Principle of Reflective Insulation

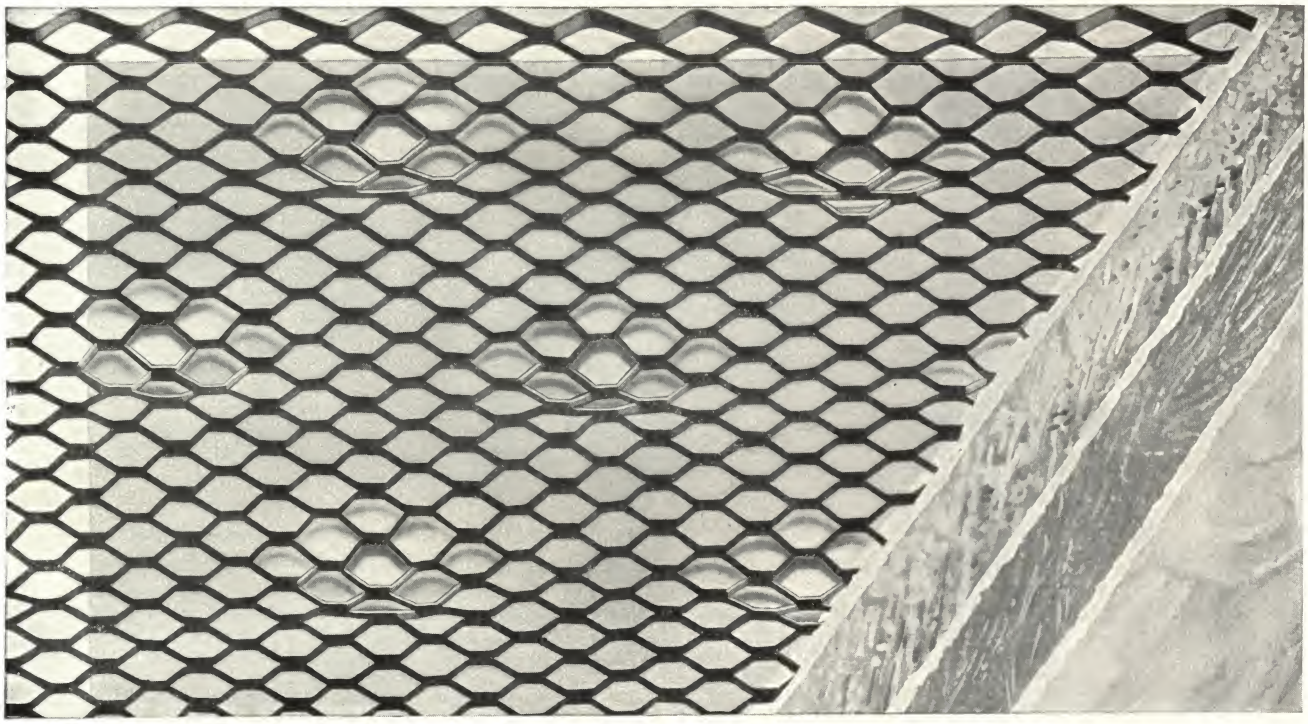
A highly homogeneous reflective surface reflects heat rays exactly in the same manner as it reflects light rays. Heat rays, however, unlike light rays, penetrate darkness, and are reflected in sealed dark places with equal effect, even though not visible to the eye. Not all surfaces which reflect light necessarily reflect heat.

A highly homogeneous reflective surface reflects or turns back 80% to 95% of the radiant heat that strikes it, depending upon the homogeneity and the thermal reflectivity of the surface. It entirely prevents this percentage of heat from entering the material in the slightest degree.

Principle of Emissivity

A highly homogeneous thermal reflective surface emits, or throws off, heat much more slowly than a dark porous surface. In the case of the product, Milcor Silvercote, this refers primarily to heat which has been absorbed from the reverse side of the material. All colors, tones and hues have rated values in the emission of heat. Dead black absorbs and emits more heat than any other shade, and it is used as a standard and rated 100%. Under this same classification Milcor Silvercote is rated at 12%. In other words, heat which may be absorbed from the reverse side of Milcor Silvercote will be emitted from the Silvercote side only about one-eighth as fast as it would from a black surface.

MILCOR SILVERCOTE
BRAND OF INSULATING PLASTER BASE



The Metal Lath Side of MILCOR SILVERCOTE Showing How Plaster Is Applied in Just the Right Amount with No Waste

Thus the **reflective** type of insulation is decidedly the most scientific and efficient. An examination of the surface of Silvercote shows why this new insulating plaster base possesses **all** the required factors of an ideal insulation—why it meets all tests of heat insulation, moisture resistance and durability.

Consequently the uses of Milcor Silvercote Insulating Plaster Base are practically unlimited.

The Construction of Milcor Silvercote

The Insulating Medium—Silvercote

The surface of Silvercote consists of a mineral, homogeneous pigment, polished into a silver-like sheen which reflects radiant heat and establishes exceptional insulation values. The surface possesses the following essential properties:

1. The surface is mineral and will not oxidize or corrode.

2. The surface is waterproof and cannot absorb moisture.

3. The surface is impervious to air filtration and non-conductive to electrical or thermal energy.

4. The surface is verminproof.

5. The surface is not affected by alkalies contained in plaster or by any of the acids or gases encountered in the customary uses of thermal insulation.

Milcor Silvercote comes in sheets which are easy to handle. The lath is light and strong, yet pliable

Milcor Silvercote may be quickly cut or shaped to fit door and window openings

Nailing Milcor Silvercote to wood studs is a rapid operation

This surface layer of 47-lb. bleached Kraft base is attached to a 90-lb. Kraft by a layer of asphaltum. This duplex moisture-proof product is then attached to Milcor metal lath by staples.

The Plaster Base—Milcor Metal Lath

This base has long been recognized by architect and trade as the most efficient and satisfactory plaster base. Plaster on a base of Milcor Metal Lath is held by a never-let-go grip of steel. Through the strong, rigid network of this fine metal lath, the soft mortar oozes and then hardens into myriads of adamantine "fingers" that permanently lock every inch of walls and ceilings to the lath. Plaster thus reinforced can't loosen or crack. It retains its original beauty, protects against fire, and remains safe permanently.

Milcor Silvercote possesses all of the required factors of an ideal reflective insulation combined with the known values of metal lath as a plastering base. The reflective type is the most efficient and scientific type of insulation. The Silvercote process of reflective insulation is the most practical and durable of this type. That combined with the unquestioned value of metal lath as a plastering base attached thereto, gives Milcor Silvercote a standing in the insulation field above all others.

Application of Milcor Silvercote with edges of lath over-lapping is shown above

Plaster is easily applied to Milcor Silvercote. The mesh assures a perfect bond and the plaster is embedded in the lath completely

MILCOR Silvercote Meets All Requirements

The 10 Superior Features of MILCOR Silvercote

1. Silvercote Reflective Insulation

Provides more permanent insulation value than any other material known.

2. Will Not Oxidize or Corrode

As will ordinary metallic insulation because it consists of a brilliant mineral pigment with an oxide base.

3. Moisture-proof, Water-proof, Vermin-proof

The absorption of moisture greatly reduces insulation value. Silvercote cannot absorb moisture.

4. Sheet Size

24 in. by 96 in. Insulation has margin on two sides so metal lath can be lapped.

5. Meets All Tests

The only combination known which effectively meets all tests for plaster base **and** insulation.

6. Milcor Metal Lath

Recognized by Architect and Trade alike as the far-superior Plaster Base.

7. Galvanized

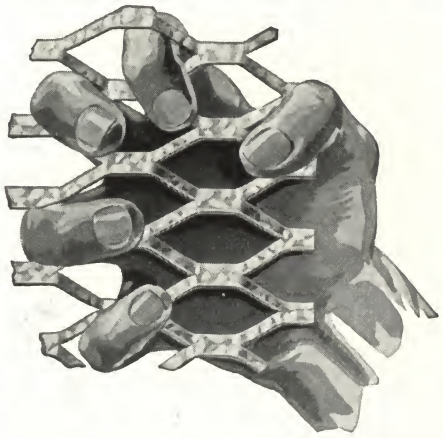
For lasting strength. All Milcor Silvercote furnished with Galvanized Metal Lath—for both interior and exterior installation.

8. Staples

Lath attached to insulation by staples with ends **away** from the plaster.

9. Plaster

Correct amount of plaster used—but no waste. Automatically back-plasters, assures perfect bond.

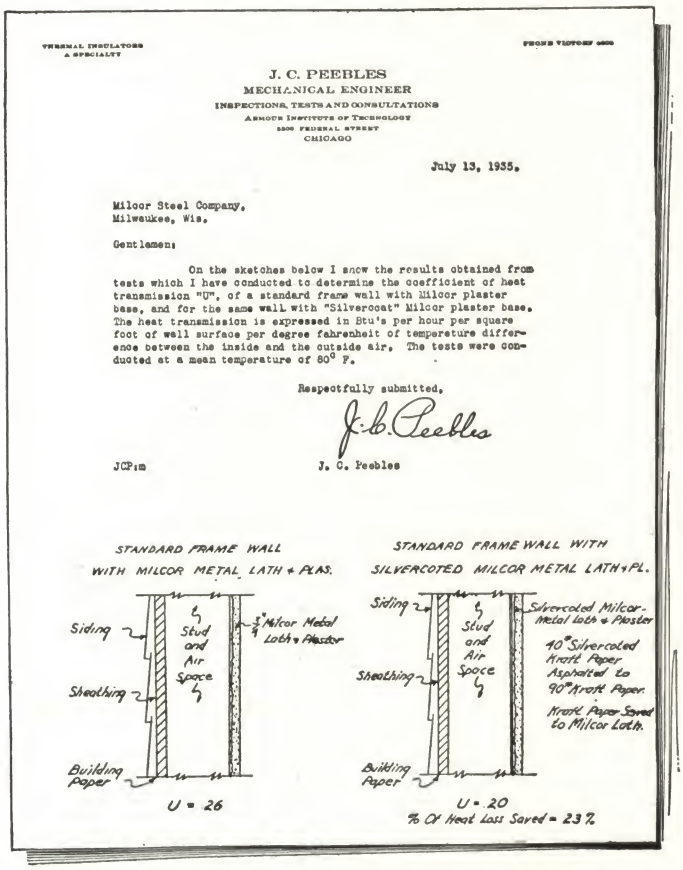


10. One Operation

Lath and Insulation applied in one operation (cost of one operation saved).

Milcor Silvercote Insures Triple Cost Savings

The user of Milcor Silvercote saves—not double, but triple! It is so easy to apply that applicators prefer it to most every other type of plaster base. But the big saving comes in that both plaster base and insulation are applied in one operation, as easily as either is applied separately. Add to this the great saving in plaster because there can be no waste and the extremely low price of the material. The result is an economy in construction that cannot be equalled.



THERMAL INSULATORS A SPECIALTY — PHONE VICTORY 4000

J. C. PEEBLES
MECHANICAL ENGINEER
INSPECTIONS, TESTS AND CONSULTATIONS
ARMOUR INSTITUTE OF TECHNOLOGY
3300 FEDERAL STREET
CHICAGO

July 13, 1935.

Milcor Steel Company,
Milwaukee, Wis.

Gentlemen:

On the sketches below I show the results obtained from tests which I have conducted to determine the coefficient of heat transmission "U", of a standard frame wall with Milcor plaster base, and for the same wall with "Silvercoat" Milcor plaster base. The heat transmission is expressed in Btu's per hour per square foot of wall surface per degree fahrenheit of temperature difference between the inside and the outside air. The tests were conducted at a mean temperature of 80° F.

Respectfully submitted,

J. C. Peebles

JCPjm

STANDARD FRAME WALL WITH MILCOR METAL LATH & PLAS.

Siding
Sheathing
Building Paper
Stud and Air Space
¾" Milcor Metal Lath & Plaster

U = 26

STANDARD FRAME WALL WITH SILVERCOTED MILCOR METAL LATH & PL.

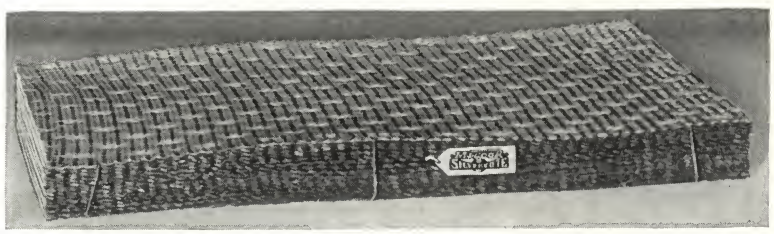
Siding
Sheathing
Building Paper
Stud and Air Space
Silvercoted Milcor Metal Lath & Plaster
40 Silvercoted Kraft Paper Asphalted to 90 Kraft Paper.
Kraft Paper Saved to Milcor Lath.

U = 20
% Of Heat Loss Saved = 23%

Recognized Tests of Milcor Silvercote

Tests made by Professor J. C. Peebles of the Armour Institute of Technology are accepted throughout the insulation field as the most scientific and impartial available. In the accompanying letter Professor Peebles shows the percentage of heat loss saved through the use of Silvercote.

Tests were made of exactly the same construction with and without Silvercote applied to metal lath.



Milcor Silvercote comes in convenient bundles ready for use. Regular size sheets are 24x96 in., 1⅓ sq. yds. each, packed nine sheets, 16 sq. yds. to the bundle

Weight of Milcor Silvercote

Weight—337 lbs. per 1000 sq. ft. Bundled 10 sheets, 24x97 in., 160 sq. ft. to the bundle.

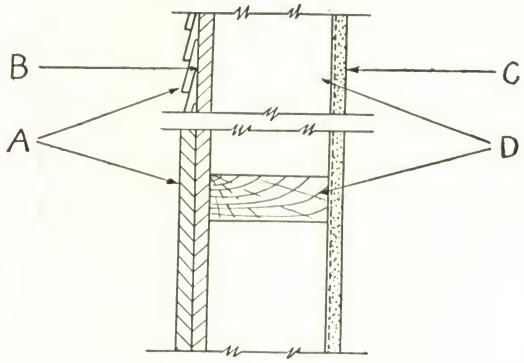
Shipped F.O.B. Milwaukee, with freight allowed to destination.

Comparative Examples of Insulation Value

Showing Percentage of Heat Loss Saved in Various Types of Construction with

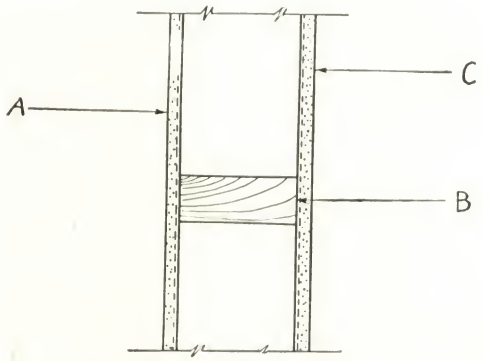
This series of charts give the "U" value or co-efficient of transmission on various types of construction without insulation and for the same type of construction insulated with MILCOR SILVERCOTE. The "U" value represents the number of B. T. U.'s transmitted in one hour through each square foot of wall for each degree of Fahrenheit difference in temperature between inside and outside surfaces.

These charts also show the percentage of heat loss saved by the use of MILCOR SILVERCOTE.



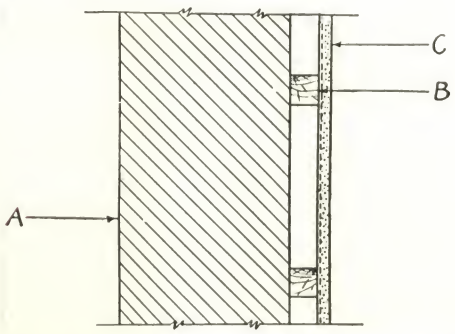
Standard Frame Wall

A. Siding, Shingles or Clapboards
B. Sheathing
C. Metal Lath and Plaster
D. Studs
Overall conductance with plain metal lath.....U: .26 B.T.U.
Overall conductance with Milcor Silvercote.....U: .20 B.T.U.
Percentage of heat loss saved: 23%



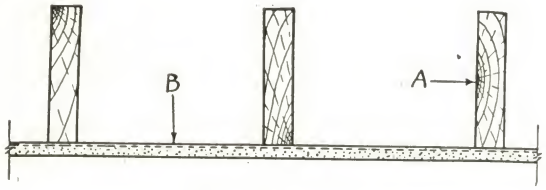
Stucco on Stud Wall

A. 1" Stucco on Milcor base
B. 3-3/4" Studs
C. Metal lath and plaster
Overall conductance of wall with plain metal lath.....U: .49 B.T.U.
Overall conductance of wall with Milcor Silvercote (both sides).....U: .23 B.T.U.
Percentage of heat loss saved: 53%



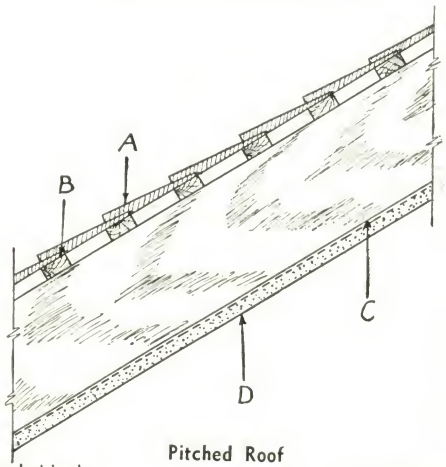
Masonry Wall

A. Solid brick wall, 8"
B. 3/4" Furring strips
C. Metal lath and plaster
Overall conductance with plain metal lath.....U: .32 B.T.U.
Overall conductance with Milcor Silvercote.....U: .23 B.T.U.
Percentage of heat loss saved: 28%



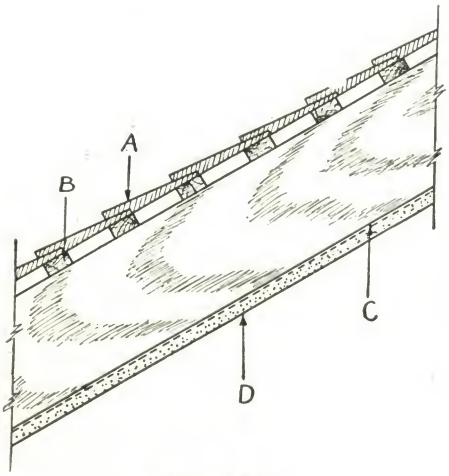
Wood Flooring

A. Joists, no flooring
B. Metal lath and plaster
Overall conductance with plain metal lath.....U: .69 B.T.U.
Overall conductance with Milcor Silvercote.....U: .38 B.T.U.
Percentage of heat loss saved: 45%



Pitched Roof

A. Wood shingles
B. Nailing strips
C. Rafters
D. Metal lath and plaster
Overall conductance with plain metal lath.....U: .30 B.T.U.
Overall conductance with Milcor Silvercote.....U: .22 B.T.U.
Percentage of heat loss saved: 27%



Pitched Roof

A. Composition or asphalt shingles
B. Nailing strips
C. Rafters
D. Metal lath and plaster
Overall conductance with plain metal lath.....U: .37 B.T.U.
Overall conductance with Milcor Silvercote.....U: .26 B.T.U.
Percentage of heat loss saved: 30%

MILCOR MANUAL

FIREPROOF BUILDING PRODUCTS

1936 EDITION

THE Gold Bond HANDBOOK

ON RELATED PRODUCTS
FOR WALLS & CEILINGS

NATIONAL GYPSUM CO.—GENERAL OFFICES, BUFFALO, NEW YORK

THE GOLD BOND HANDBOOK

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For Gold Bond Color Texture Finish, see File Index.
For Monolithic Gypsum Floor and Roof Construction, see File Index.

THE Gold Bond HANDBOOK

ON RELATED PRODUCTS FOR WALLS AND CEILINGS

Manufactured and sold by National Gypsum Company through 7000 dealers in 37 States east of the Rocky Mountains, offering a complete service in related wall and ceiling products controlled and guaranteed by one company.

Copyright 1935 by National Gypsum Company
(Prepared by Sweet's Catalog Service)

NATIONAL GYPSUM COMPANY — GENERAL OFFICES, BUFFALO, N. Y.

Location of Plants:			
National City, Mich.	Akron, N. Y.	Luckey, Ohio	Clarence Center, N.Y.
Camden, New Jersey	Niles, Ohio	Oranda, Va.	Fort Dodge, Iowa
	York, Penn.	Rotan, Texas	Lime City, Texas

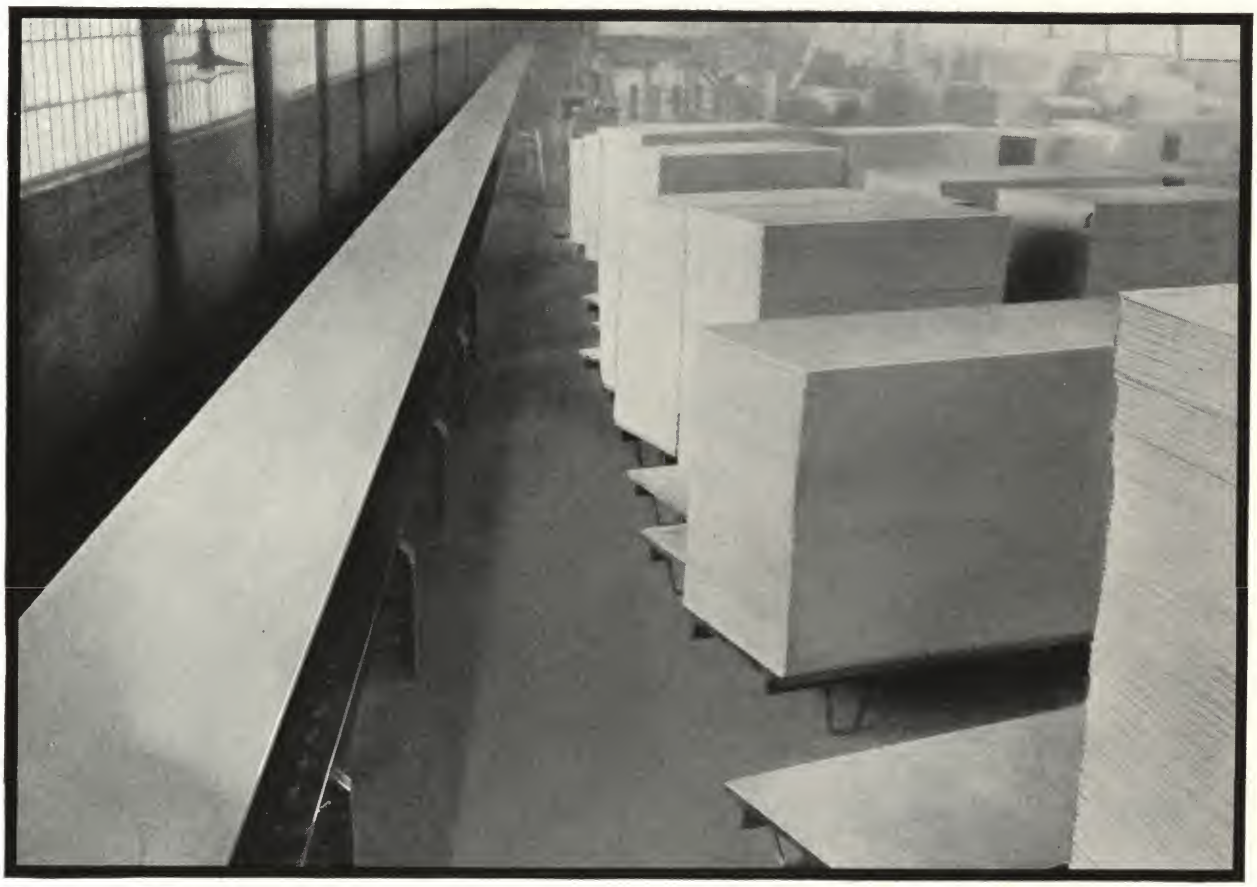
SEVEN MEN AT A TABLE

How National Gypsum started from scratch in 1925—changed the standards of an entire industry—added profitable items and enlisted 7000 reputable Gold Bond dealers—and is today one of the potent factors in the wall and ceiling field

THE story of National Gypsum is a success story, pure and simple. It starts back in 1925, with seven men seated around a conference table in Buffalo.

Not one of these men was a millionaire. Their total resources, reckoned in the figures of big business, was a mere nothing. Yet they had what many a failure lacked —first hand knowledge of architect, contractor and dealer problems through long experience in the building products field.

They also had an idea that better gypsum wallboard could be made than that which was on the market at that time—heavy, brittle stuff, with little or no insulation value. But which even then appealed to dealer and architect as a wall material superior to old-time fibre boards.



One of the Board Operations in the Large Gypsum Mill at Clarence Center, N. Y.

First Light-Weight Board

Every one knows what happened immediately following the introduction of the first Gold Bond wallboard. Lighter by several hundred pounds per thousand square feet, stronger, for the first time giving real insulation value, and sold only through recognized dealers—it was a sensation. During the first few months more than 800 reputable dealers investigated this board and this new company, and then swung over.

Pooh-poohed at first by competition, National continued to add new dealers. Conservatives who waited to see what this new company would "amount to" hesitated no longer, stocked up on the new board, and discovered that for the first time they had a real profit-maker in gypsum wallboard.

In another few months with National sales rolling up volume, competition began to experiment with a similar board. But meanwhile National had not been asleep. Improvement followed improvement. Research laboratories were constantly at work with an eye to the industry's need—the strongest, lightest board available.

The weight was further decreased. Handling was made easier.

Gypsum Mill at National City, Mich.

Now an Even Better Wallboard

In April, 1934, the greatest improvement since the introduction of light weight gypsum wallboard was announced by National Gypsum Company—a ⅜-inch board weighing only 1350 pounds to the thousand square feet, 18% lighter than any Gold Bond hitherto made, stronger, with much greater insulation value. Better all the way around, the saving in unloading and handling costs alone amounts to a sizable item on every worthwhile job.

Unloading Raw Material for Insulation at Camden, N. J.

A COMPLETE WALL AND CEILING SERVICE

Gypsum . . . Lime . . . Insulation Metal Products

Always in the back of the heads of the management of National was a desire to build a complete Gold Bond wall and ceiling service, and thus be in a position to offer the dealer a complete and well rounded out line, backed by the quality reputation and guarantee of a single organization. Today that expectation is

realized, and National's services to the trade fall under four heads, all applying directly to wall and ceiling construction:

Gypsum Plasters, Lath and Wallboard

Since its organization in 1925, Gold Bond has pioneered many important changes for better gypsum products. National's story of quality begins at the mine where the rock is the best to be found and continues through every carefully supervised step of factory operation, to the finished job on the wall. The installation of new machinery and methods, plus strict laboratory standards at the mill, has resulted in improvements in Gold Bond Gypsum Plaster, until today it is one of the most favorably known products of its kind. A perfect team mate for Gold Bond Plaster is Gold Bond Gypsum Lath, made under the same laboratory control as regular Gold Bond Gypsum Wallboard and Gypsum Plaster.

To round out its line of gypsum products completely, National in 1933 absorbed the patents of the Macoustic Engineering Co., long known as the world leaders in the acoustical plaster field. The Macoustic Engineering Division of National Gypsum, and its experienced engineers are available to discuss all acoustical problems regardless of size.

Finish Lime Plant at Luckey, Ohio, Operated Under Laboratory Control

Lime

Second of the four essentials to a complete wall and ceiling service is lime. National's Finish Lime Plant is located at Luckey, in the heart of the rich Ohio dolomite lime field. Here a modern mill is operated, under laboratory control, turning out a finished product that is second to none. . . . Additional lime plants are located at York, Pa., Oranda, Va., and Lime City, Tex., where Mason's Lime, Chemical Lime, Agricultural and Industrial lime are manufactured.

Section of Lime Quarry, Luckey, Ohio, in the Heart of the Dolomite Field

Insulation

Gold Bond Fibre Insulation Board is famous for its superior strength, permanence, weather resistance and toughness. Its superiority to boards made of quick growing material is largely due to the imported licorice root fibre of which it is formed. This four year growth in stony tropical soil, is literally the toughest insulation material known.

Gold Bond Aluminum Foil Insulation Lath and full length wallboard are made by laminating sheets of pure aluminum to one side of regular gypsum lath and board. The reflective insulation resulting, besides being fire-proof, is considered by many the best type available.

Metal Lath

The next step in completing the all-around wall and ceiling service offered by National was the pur-

chase early in 1934 of the complete metal lath plant of Kalman Steel Corp., located at Niles, Ohio. In this plant, with the installation of newest and latest machinery, National is manufacturing a full line of metal lath and reinforcing products, under the same quality supervision that marks the production of every product bearing the Gold Bond name.

Typical Views in the Laboratories at Plants and Main Office

Acquisition of Universal Gypsum and Lime Company in 1935 . . . Another Great Step in Gold Bond's Progress

In September, 1935, came the important announcement that National Gypsum Company had acquired control of, and taken over the management of, Universal Gypsum and Lime Company, with its three gypsum plants and three lime plants.

This gave National a chain of eleven plants, including a gypsum mill in Texas to better serve the Southwest and another in Fort Dodge, Iowa, to accommodate the Middle-Western States. This network of eleven plants, located advantageously from Iowa to the Atlantic Seaboard and from Northern Michigan to Texas, enables Gold Bond to render the utmost in service to dealers in every town and hamlet this side of the Rockies.

The Model Gypsum Plant at Rotan, Texas. Insures Prompt Service to Dealers in the Southwest.

Gold Bond Plant at Niles, Ohio, where Gold Bond Metal Products Are Made

YEARS
OF PROGRESS

Since 1925, NATIONAL GYPSUM COMPANY has come all the way from bottom place in the gypsum industry, to top position in the wall and ceiling products field.

The progress that has marked these years can easily be accounted for. It has always been Gold Bond's policy to understand architect, contractor and dealers problems, to meet these problems with quality products salable at a fair profit, and to support its products and dealers with intelligent, forward-looking merchandising plans.

The most significant proof of National's position today can be gained by a study of its financial reports for four depression years, during which the company moved steadily ahead, increasing its representation and service facilities in the field, and added numerous new dealers of the most desirable type.

Gold Bond has come a long way since those seven men gathered around a table to discuss a new kind of gypsum wallboard and a new idea of service to the trade back in 1925. But it has never strayed from the original ideas of fair play and inventive research laid down at that meeting. It never will.

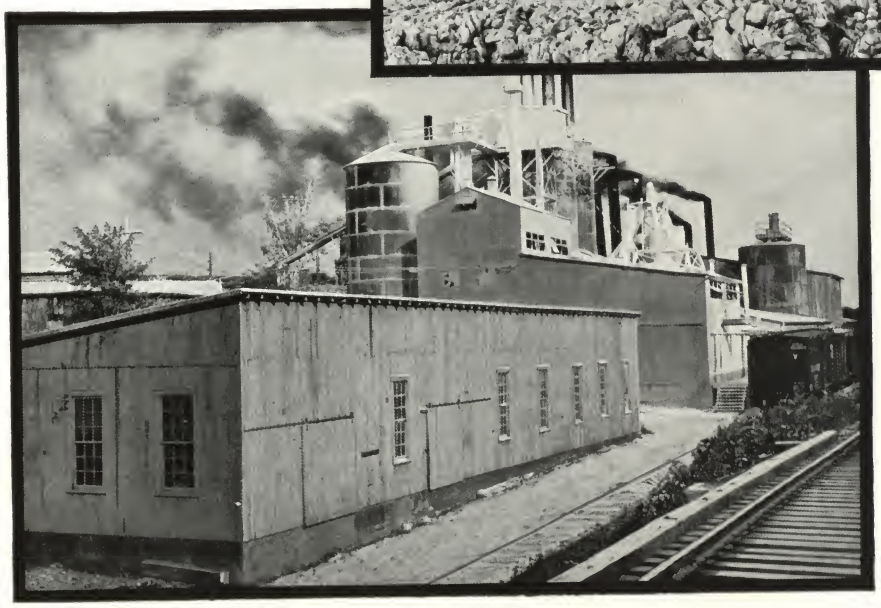
Gypsum Plant at Akron, N. Y.

Gold Bond is fortunate in having two mines and two plants in the heart of Western New York's rich gypsum deposit (Akron and Clarence Center, N. Y.)

Below:

Lime Plant at York, Pa.

One of the most modern and complete lime plants in the country. Gas-fired kilns, designed and installed in this plant by world-famous engineers, produce a more uniformly burned product, so vitally important in the manufacture of lime.

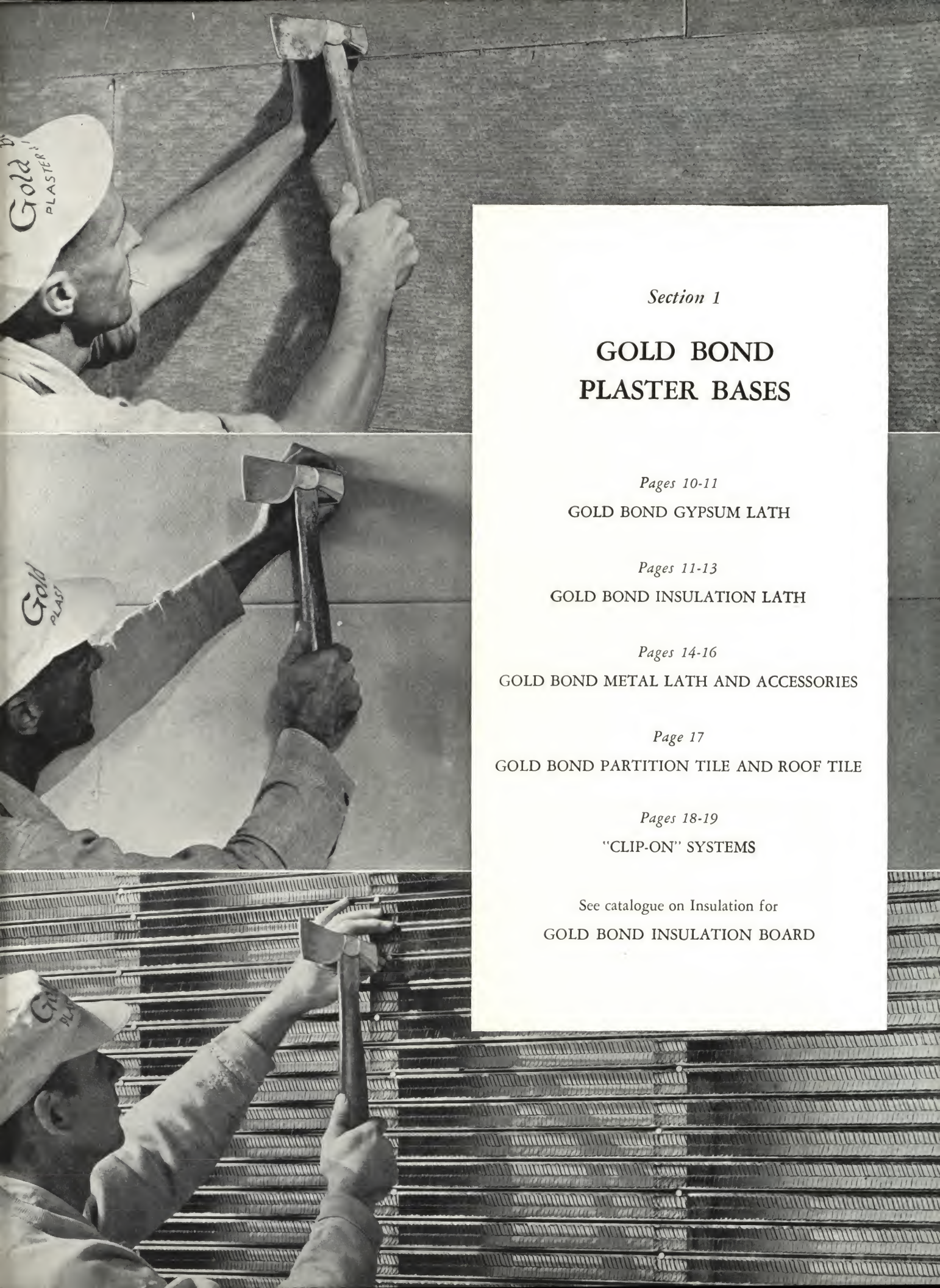


At Left:

Oranda, Va., Lime Plant

Limestone from the mines at Oranda, Va. and York, Pa., is noted for its purity and high calcium content.

At both of these plants, is manufactured Mason's Lime and a full line of Agricultural and Industrial Lime, the latter product being used in the manufacture of paper, bricks, glass, chemical and steel products, for water softening, and for dozens of other industrial uses.



Section 1

GOLD BOND PLASTER BASES

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GOLD BOND GYPSUM LATH

Pages 11-13

GOLD BOND INSULATION LATH

Pages 14-16

GOLD BOND METAL LATH AND ACCESSORIES

Page 17

GOLD BOND PARTITION TILE AND ROOF TILE

Pages 18-19

"CLIP-ON" SYSTEMS

See catalogue on Insulation for

GOLD BOND INSULATION BOARD

GOLD BOND PATENTED GYPSUM LATH

Exclusive Patents give Gold Bond Gypsum Lath many distinct advantages in addition to lighter handling weight

Gold Bond Gypsum Lath Saves Time and Labor in Handling and in Application. Comes in Handy Bundles

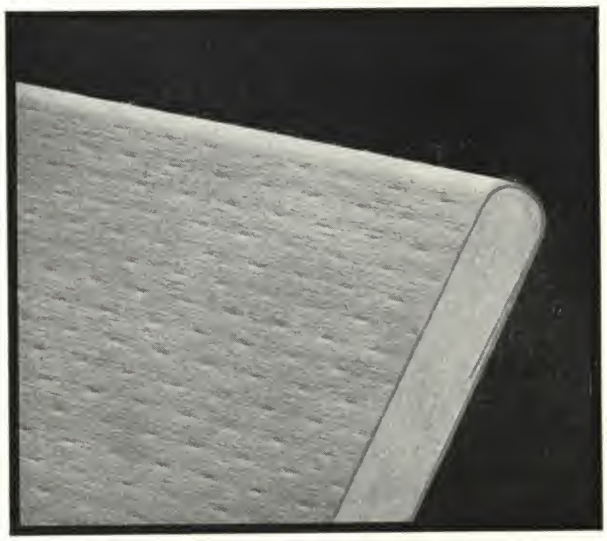
MADE under the same exclusive patents as Gold Bond Gypsum Wallboard, Gold Bond Gypsum Lath has all the advantages of extra light handling weight, superior strength, and easy nailing qualities that distinguish this brand of gypsum board.

Superior Bond to Plaster

The bond of plaster to Gold Bond Gypsum Lath is not dependent on mechanical keys but is obtained by the felting action of billions of gypsum crystals in the set plaster embedding themselves onto the surface of the Gold Bond Gypsum Lath during the setting action. Authoritative tests have shown this bond to be four times as great as any mechanical bond such as that obtained on wood lath, metal lath, etc.

Insulating—Easy Nailing

The extra insulation value offered by Gold Bond Gypsum Lath is accounted for by the patented process which results in the core being filled with millions of uniformly tiny air bubbles. These little dead air pockets make effective insulation, at the same time detracting in no way from the superior strength of the product. Their presence also helps account for the fact that there is little likelihood of Gold Bond Lath splintering or cracking at the edges when nailed.



The Distinctive Indented Surface of Gold Bond Gypsum Lath
(16-in. widths only, have indented surface)

Fireproof Qualities

Because it is solid gypsum rock, Gold Bond Gypsum Lath is highly fire resistant. In repeated blow-torch tests, the material has shown its ability to resist fire. It is non-inflammable and non-combustible. When covered with ½ in. of plaster, it makes a wall ⅞ in. thick—solid gypsum rock.

A Brace to Framing

The strength and rigidity imparted to a wall by a section of Gold Bond Gypsum Lath adds considerably to the structural strength of the building as a whole. Also there is less likelihood of plaster cracking.

No Waste—No Buckling

A noticeable saving is made when Gold Bond Gypsum Lath is used because of the fact that no plaster is lost going into keys or dropping. All the plaster applied goes directly onto the surface. Gypsum Lath is an extremely rigid plaster base with gypsum rock its main constituent. It is therefore free from swelling or buckling, inherent in fibrous plaster bases and is absolutely unaffected by application of wet plaster. Gypsum Lath walls are always true, regardless of the most adverse moisture conditions.

Cost and Time Saving

Gold Bond Gypsum Lath costs are extremely moderate . . . only slightly more than inflammable wood lath. The main difference is not in price but in the better appearance, and permanence of the finished job. Application of gypsum lath in sheets is, of course, less costly than nailing up wooden lath strips. Also there is a great saving in plasterer's time, as the slightly indented surface of Gold Bond Gypsum Lath allows plaster to be spread evenly and fast, with no wasted time or material going into making keys.

It is a Good Sound Wall for a Workman to be Proud of. Fireproof, too. Patented Indented Surface Aids Application of Plaster

Gold Bond Gypsum Lath Advantages

1. **Ideal Plaster Base**
   Provides a greater bond for gypsum plaster than any other type of lath.
2. **Low in Cost**
   Costs but little more than wood lath and plaster but gives better job—more rigid and more fire-resisting.
3. **Braces the Framing**
   The strength and rigidity of large sheets braces the structural framing.
4. **Saves Time on the Job**
   Saves time in application and plaster dries more quickly and evenly.
5. **Fireproof Qualities**
   It does not burn or readily transmit heat.
6. **Sound Insulating Qualities**
   Very effective in elimination of sound transmission.
7. **Does Not Expand, Contract, Swell or Buckle**
   Non-warping. No cracks due to buckling of lath.
8. **No Waste of Plaster**
   Does not require keys, so saves on plaster from keys and droppings.
9. **Light and Easily Handled**
   Light in weight, easily handled and no rough edges or splinters.
10. **Allows Uniform Plaster Thickness**
    With no buckling, the plaster is applied in even thickness.

Specifications: See Master Specifications, page 32.

Detail Characteristics of Gold Bond Lath

General Characteristics—Size, Weight, etc.

Gold Bond Gypsum Lath is ⅜ in. thick (also made in ¼ in. and ½ in. thicknesses), consisting of a cellular gypsum core encased in a special fibre sheet covering front, back and long edges. Edges are rounded, smooth and assure easy handling.

Sizes of Sheets, Weight and Packing

The sheets are made in two standard sizes:

16x32x⅜ in. Packed 6 to a bdle., 21⅓ sq. ft. Wt. about 40 lbs.

16x48x⅜ in. Packed 6 to a bundle, 32 sq. ft. Wt. about 60 lbs.

Also made in 24x32 in., 32x36 in., and other special sizes, and in ¼ and ½ in. thicknesses. . . . Lath with indented surface supplied only in the standard width of 16 inches.

Gold Bond Identification

Each sheet is stamped on the back with the Gold Bond Trade Mark and this side is turned against the studs when applied. The slightly indented pattern on both sides as shown in the illustration is also a distinctive identification even after application. While the indention is slight, it has been proved by tests that it aids in preventing slipping of the plaster when being applied.

Application and Saving of Time

There is an actual saving in labor time in the application of Gold Bond Gypsum Lath as against wood lath. A lather can average 125 to 150 sq. yds. of gypsum lath a day, while 100 to 115 sq. yds. is an average for wood lath. Because of the uniform size sheets it is easy to cut and fit around openings, etc. When scored with a sharp edge, it breaks cleanly over a straight edge. Joints of the lath must be staggered when applying. Gypsum lath must not be wetted before or after application.

Only Gypsum plaster should be used on gypsum lath. It is easier for the plasterer to apply the plaster as he does not have to form keys and his plaster goes farther and quicker. There is also about a 20% saving in the amount of plaster required.

As the plaster is of uniform thickness without extra depth of keys, it dries out faster and more evenly. This means the job is finished and the wall or ceiling ready for trim or finish in a shorter time.

Preventing Shrinkage from Wet Plaster

The prevention of shrinkage in the wood frame is aided by the use of gypsum lath. The lath does not absorb moisture from the plaster, so keeps it away from the inside of the partition and studs. It also keeps the wet plaster from actual contact with the wood framing. As the lath itself does not expand or contract and acts as actual bracing, the possibility of cracking is reduced to a minimum.

GOLD BOND INSULATION LATH

There are two types of Gold Bond Insulation Lath:

No. 1—Gold Bond Aluminum Foil Lath which presents the newest and most effective principle—reflective insulation—in combination with rigid fireproof gypsum lath.

No. 2—Gold Bond Fibre Insulation Lath made full ½-in. thick of the tough fibres of the licorice root plant.

A complete description of both types of lath is given in the section on Gold Bond Insulation.

GOLD BOND REINFORCED JOINT GYPSUM LATHING SYSTEM

A Lathing System which we believe provides the most satisfactory lathing base

IN general the system consists of the use of Gold Bond Gypsum Lath, the reinforcing of all joints of the lath, all internal angles of walls and ceilings and around door and window openings with metal reinforcing. All external angles should be protected with corner beads.

Three Coat Plaster Job Required

With Gold Bond Reinforced Joint Lathing System it is necessary to use a three coat plastering job to adequately cover the metal reinforcing strips. This assures a full ½-in. thickness of plaster being applied, resulting in a strong, thick wall over all. It precludes the possibility of skim coating the job or applying plaster too thin for best results.

The Ideal Plaster Base System

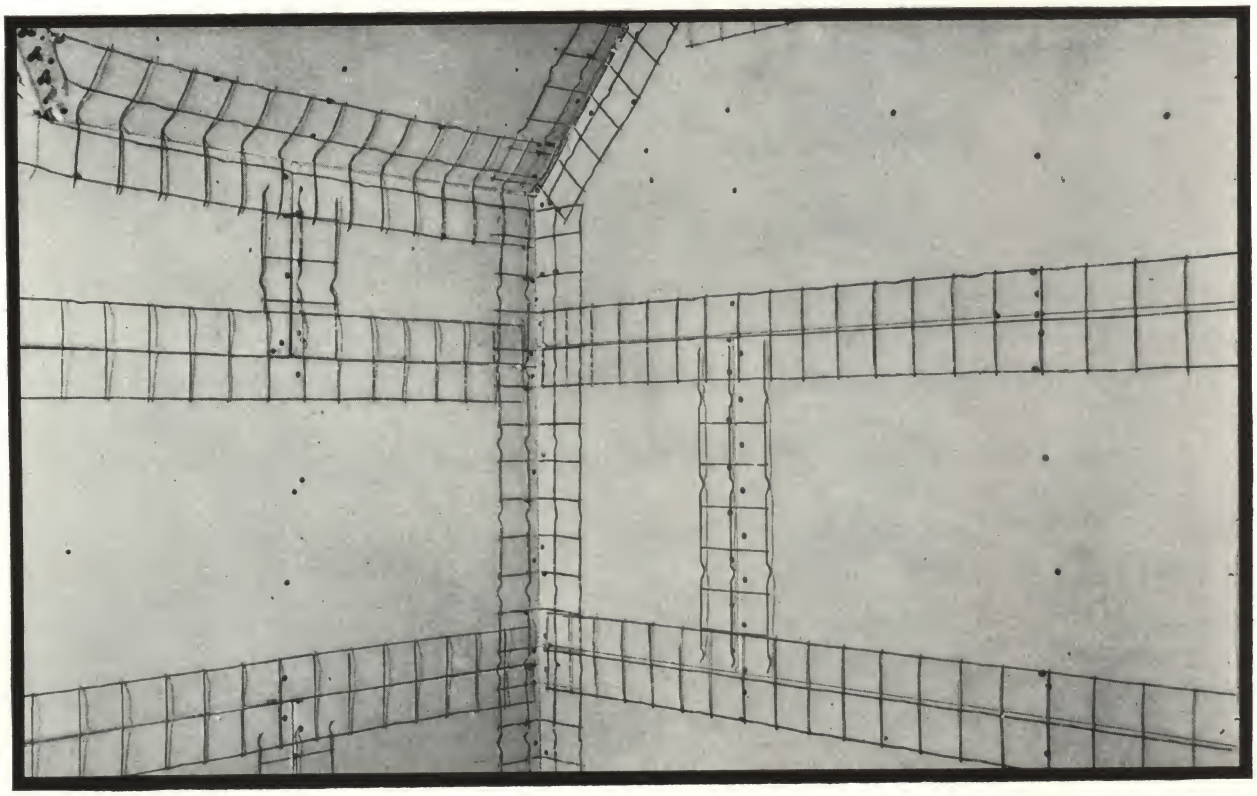
We believe this system to be the ideal lathing system considered from all standpoints of construction. It offers the special advantages of gypsum lath and in addition safeguards against the possibility of any cracks developing at the joints in the lath except under serious settling of the building. While it costs slightly more than using plain gypsum lath its use is justified where the best workmanship is desired.

The Reinforced Joint

The reinforcing of the joint is accomplished by the use of a metal reinforcing mesh nailed over all joints. This becomes embedded in the plaster as it is applied. The reinforcing used in this manner produces a real reinforced plaster slab which is ⅞ in. thick. The actual strength developed at the joint amounts to five times that of an unreinforced joint!

One Hour Fire Test

The lathing system, plastered with three coats of plaster ⅞ in. grounds will withstand the Standard One Hour Fire Test as specified by the American Society for Testing Materials.



Interior Showing the Reinforced Joints Ready for Plastering

NATIONAL GYPSUM COMPANY

STANDARD SPECIFICATIONS

FOR GOLD BOND REINFORCED JOINT LATHING SYSTEM

1. Scope of Work

The Gold Bond Reinforced Joint Lathing System shall be used in the following locations. (List where the system is to be used.)

2. Checking of Framing

Lather shall examine all framing for accuracy and proper nailings before applying lath. All electric outlets shall be properly located and set and all openings shall be framed. Any defective work shall be reported to the architect before lathing is started.

3. Materials

3–1. All materials shall be supplied by the National Gypsum Company and shall be delivered to the job in their original packages.

3–2. Lath—Gold Bond Gypsum Lath (3/8 x 16 x 48 in.).

3–3. Joint Reinforcing—Reinforcing Mesh 4 x 48 in. for lath and diagonal reinforcing and 6 x 48 in. for internal angles.

3–4. Metal Corner Beads—Gold Bond Galvanized Metal Corner Bead.

3–5. Metal Lath—Gold Bond Expanded Metal Lath, (weight), (Painted), (Galvanized), (Copper Bearing), (Armco Ingot Iron).

Gold Bond Reinforcing Joint Showing How Steel Is Automatically Embedded in the Plaster

3–6. Nails—For Application of Gold Bond Gypsum Lath shall be standard lathing blued nails (1 1/8 in. x 13 gauge—7/16 heads).

3–7. For application of Gold Bond Reinforcing, special nail supplied with the reinforcing shall be used.

4. Application of Gold Bond Lathing System for Wood Framing

4–1. All walls, ceilings and partitions, as specified, shall be covered with Gold Bond Gypsum Lath.

4–2. Lath shall be applied with trade marks facing the stud joists or furring, taking care to break joints. Vertical joints shall not occur opposite each other on the same stud. Lath shall be neatly fitted tightly at all angles.

4–3. All lath shall be cut first by scoring lath with hatchet or knife and then break over straight edge.

4–4. All lath (16 x 48 in.) shall be nailed to bearings with 10 standard lathing nails—using three (3) nails along each 16-in. edge and one (1) nail at each bearing on long side. Nails shall be kept back at least 3/8 in. but not more than 3/4 in. from edges of boards. Nails shall be driven home without breaking surface of lath. No nails shall be used beyond edges of lath except when lath is applied to curved surfaces.

4–5. Any openings for outlet boxes, etc., shall be cut clean and neatly fitted to proper sizes and locations.

5. Reinforcing Joints

5–1. Gold Bond Joint Reinforcing shall then be applied over all vertical and horizontal joints of lath. Horizontal joints shall be covered first, using 48 in. strips, then cover end and short joints with reinforcing strips 12 in. long. Reinforcing shall be securely nailed centered over each joint.

5–2. All internal angles of walls and ceilings shall have Gold Bond Angle Reinforcing with 3 in. leg, applied before applying the reinforcing over lath joints. Reinforcing shall butt but not over-lap and shall be applied with crimp against face of lath.

5–3. All openings for doors, windows, arches, etc., shall be reinforced at corners by diagonal reinforcing 12 in. long.

5–4. All reinforcing shall be securely nailed by special nails, supplied with reinforcing, every 12 in. and staggered along both edges of lath.

5–5. All external angles shall be reinforced full length or height with (specify no.) Gold Bond Corner Bead securely nailed over the edge of gypsum lath.

6. Plastering

6–1. Plastering shall be three-coat work of gypsum plaster (specify plaster, finish, etc.).

Gold Bond Metal Lath is easily and quickly applied. Partitions made with it are rated by the National Board of Fire Underwriters as second only to reinforced concrete

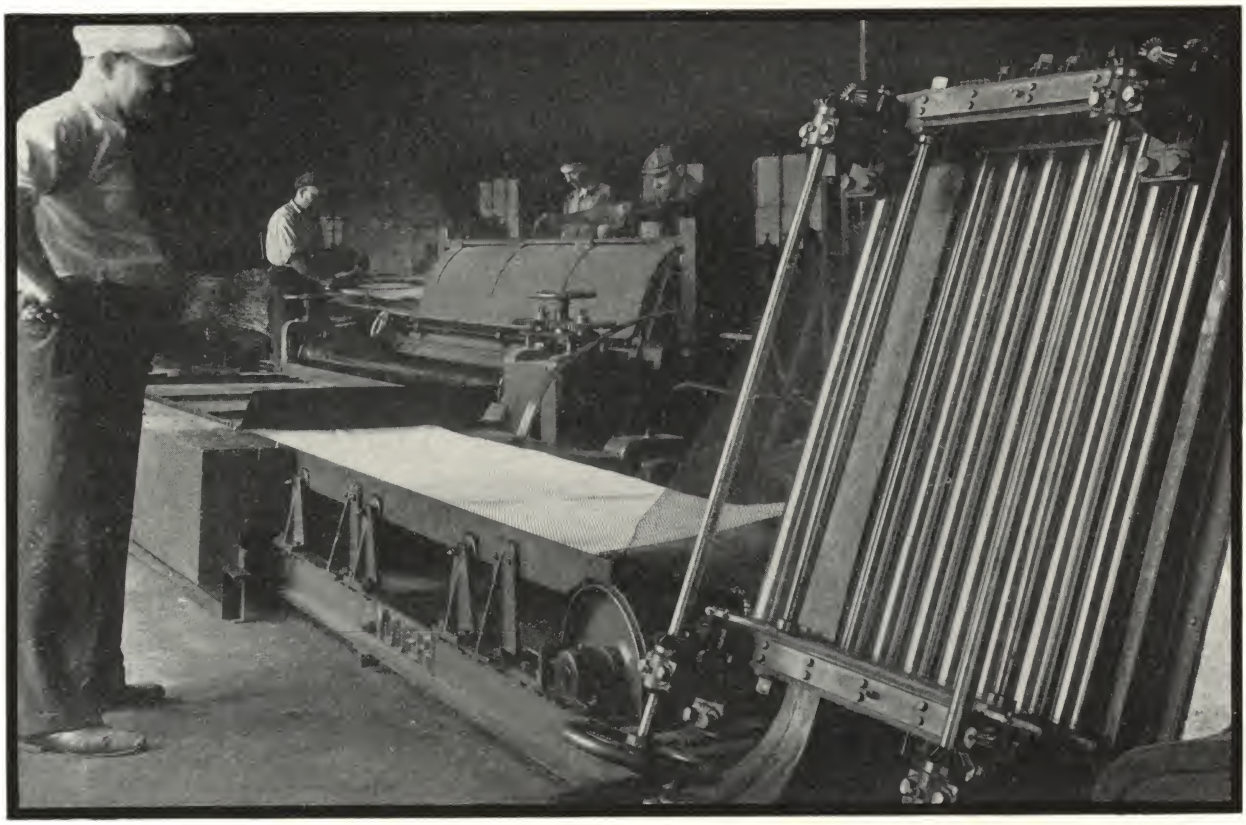
GOLD BOND METAL LATH AND ACCESSORIES

Most Gold Bond Metal Lath Products are made from steel sheets manufactured by the open hearth process

THE National Board of Fire Underwriters gives Metal Lath with gypsum plaster on wood studs a one hour fire rating. This means should a fire start in one room it will take one hour before it reaches the room adjoining.

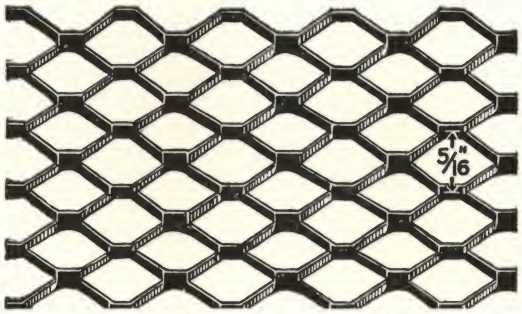
The Board of Fire Underwriters also rates Metal Lath partitions second only to reinforced concrete—and above all others in resistance to earthquake and explosion shocks.

Space permits in this catalog only the inclusion of the most used items in the Gold Bond Metal Lath and accessory line. Others on which complete information can be obtained by writing Metal Lath Division, National Gypsum Company, Buffalo, N. Y., include: Corner beads—5-in. wing expansion, scalloped, bull nose expansion and wide flange. Base beads—standard, expansion flush and curved point. Also available and of best quality, corner bead clips, Gold Bond Stripite (a diamond mesh lath cut into strips), galvanized tie wire and special Gold Bond Corrugated Wall Ties, used to bond wood sheathing and brick veneer and other masonry surfaces.



Newest Type of Metal Lath Machine—in Use at Niles, Ohio, Plant

GOLD BOND METAL LATH PRODUCTS



Gold Bond Small Diamond Mesh Lath

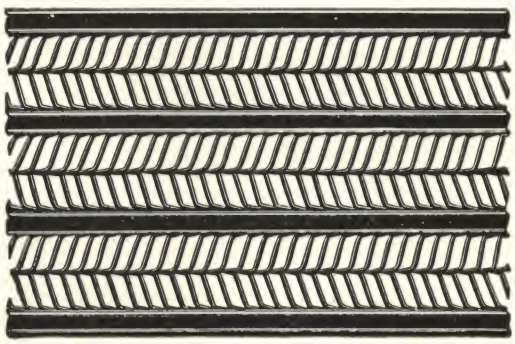
Can be used on any type of metal lath job. It constitutes better than 50% of all the metal lath sold.

Gold Bond Small Mesh boasts of having as small a mesh as any diamond mesh manufactured; containing approximately 3000 more keys per square yard than the regular 3/8 in. mesh. Our sheets lay perfectly flat and each sheet has re-squared ends assuring full covering width. Regular 3/8 in. mesh can be furnished upon request. Is made from open hearth box annealed sheets.

Standard Weights—2.2, 2.5, 3.0, 3.4 lb. Furnished in painted steel, copper bearing and Armco Iron. Galvanized in 2.5 and 3.4 lb. only.

Sheet Sizes

—24 in. x 96 in. 9 sheets per bundle or 16 sq. yds.
—27 in. x 96 in. 10 sheets per bundle or 20 sq. yds.



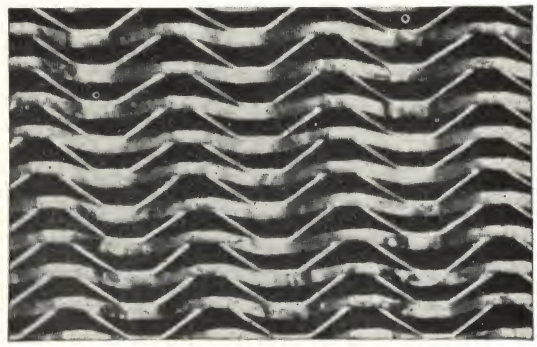
Gold Bond 1/8-in. Flat Rib Lath

Was primarily designed for a growing demand by the trade for a more rigid expanded metal lath and a more economical plastering job. Its ribs are shaped in the form of a "Z"; this together with its herringbone design makes it exceptionally rigid. It is easy to erect and nail and does not buckle or sag.

Gold Bond Flat Rib saves approximately 25% of plaster over the 3/8 in. Diamond Mesh Lath. Its biggest use is for walls and ceiling in the better class of residential, apartment house and hotel construction. Made from open hearth box annealed sheets.

Standard Weights—2.75, 3.0 and 3.4 lb. Furnished in painted steel and copper bearing steel. Galvanized in the 3.4 lb. weight only.

Sheet Size—24 in. x 96 in. 9 sheets per bundle or 16 sq. yds.

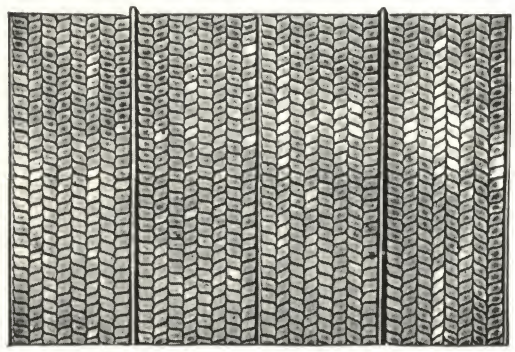


Gold Bond Cup Lath

Is the ideal stucco base. It is an exclusive Gold Bond Product. The meshes are 3/8 in. wide. Its most unique feature is that each mesh is corrugated 1/4 in. deep running in a continuous straight line through the length of the sheet as well as across the full width of the sheet. This exclusive cup feature assures a proper thickness of the plaster or stucco and provides for the most uniformly efficient key possible reinforcing the plaster in all directions. Made from open hearth box annealed sheets.

Standard Weights—2.5, 3.0, and 3.4 lb. Can be furnished in painted steel, copper bearing and Armco Iron. Galvanized in 2.5 and 3.4 lb. only.

Sheet Size—18 in. x 96 in. 15 sheets per bundle or 20 sq. yds.



Gold Bond 3/8-in. Rib Lath

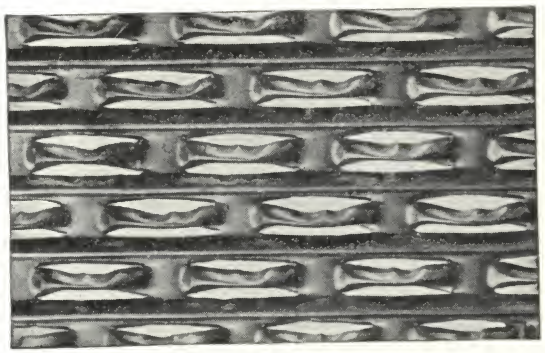
Is generally used for ceiling and for concrete reinforcing in floors in connection with steel joists, junior beams, etc.

Gold Bond 3/8 in. Rib is outstanding for its rigidity. Ribs are 4 in. on center. Sheets nest perfectly when lapping which results in a smooth surface for plastering, thereby eliminating bulges and creating a saving in plaster waste. Manufactured from open hearth box annealed sheets.

Standard Weights—2.5, 3.0, 3.4 and 4.0 lb. Furnished in painted copper bearing steel and Armco Iron. Galvanized in 3.4 lb. only.

Sheet Size—24 in. x 96 in. 9 sheets per bundle or 16 sq. yds.

GOLD BOND METAL LATH PRODUCTS

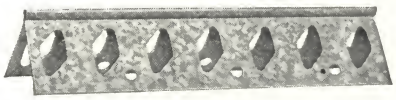


Gold Bond Sheet Lath

Is used generally for tile backing due to its being the most rigid lath manufactured. It requires considerably less plaster than any other type of metal lath and therefore, is often used on residences and large apartment buildings. The trough formation of the ribs creates a suction and makes it the ideal lath for overhead work on ceilings. Gold Bond Sheet Lath is of our own exclusive design. Manufactured from open hearth annealed sheets.

Standard Weights—4.5 lb. in painted and 5.5 lb. in galvanized.

Sheet Size—24 in. x 96 in. 9 sheets per bundle or 16 sq. yds.



Gold Bond Standard Corner Bead

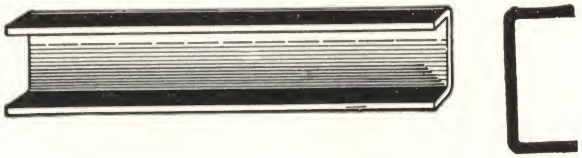
Can be used on any type of construction. It provides an absolute straight corner and is easily erected. Every bead must be straight and true before it leaves our plant.

Stock Lengths—6, 7, 8, 9, 10 and 12 ft. Made in 26 gauge. 24 gauge on special order. Packed 10 pieces per bundle. Weighs 200 lbs. per 1000 lin. ft.

Gold Bond Standard Expansion Corner Beads

Can be used in all types of construction. Forms an exceptionally fine key due to the reinforcing given by the 2½ in. wings. Is easily erected.

Stock Lengths—6, 7, 8, 9, 10 and 12 ft. Made in 26 gauge. 24 gauge on special order. Shipped in crates of approximately 500 or 1000 feet only. Weigh 208 lbs. per 1000 lin. ft.



Gold Bond Cold Rolled Channels

Are used generally for suspended ceiling work and 2 in. solid partitions. They are formed cold from the best quality strip steel. Gold Bond Channels are absolutely straight and are especially adaptable to form work because of their bending qualities and rigidity.

Type	Stock Lengths, Feet	Pcs. per Bundle	Weight per 1000 lin. ft. lbs.
Pencil	12, 14	20	113
Box	16, 18, 20	20	276
¾ in.	16, 18, 20	20	276
1 in.	16, 18, 20	20	332
1½ in.	16, 18, 20	10	442
2 in.	16, 18, 20	10	553

Furnished unpainted unless otherwise specified. Pencil Channel always furnished in painted stock.

Supplied for 20″ and 31½″ openings. Two pieces to set.

Supplied for 31½″ x 49½″ openings. Four pieces to set.

Supplied for 61½″ and 70½″ openings. Four pieces to set.

Gold Bond Metal Arches

Are made from galvannealed sheet steel. A perfect arch for approximately half the cost of curved wood forms to which must be fitted corner bead and metal lath. They are easy to erect and are ideal for residences and apartment houses. Gold Bond Metal Arches are made in true circle, gothic and elliptic designs. They are standard for 2 x 4 studs or bucks. The studs or bucks are to be spaced 1½ in. wider than the desired finished opening.

This allowance is for the thickness of the lath and plaster ground. Can be jointed with standard corner bead by using the shank of a No. 7 box nail.

GOLD BOND GYPSUM PARTITION TILE AND SHORT SPAN REINFORCED GYPSUM ROOF TILE

True, uniform, machine moulded tiles that are fireproof, insulative, lightweight and easily handled

PARTITION TILE

GOLD Bond Gypsum Partition Tile is a lightweight, sturdy product, used for the finest type of fireproof partitions.

Supplied in all standard thicknesses that permit economical erection with a minimum of waste. It is recognized as the standard material for interior, non-bearing partitions, column covering, and wall furring. Is particularly adapted to cutting or sawing and chasing for conduits, switch boxes and pipe lines.

Gold Bond Partition Tile is made under the most modern methods with the latest type of machinery, in standard uniform sizes 12 in. x 30 in., thickness 2 in. solid and 3, 4, 5 and 6 in. hollow. 1½ in. and 2 in. hollow furring tile should be made on the job by ripping 3 in. and 4 in. hollow tile through the center, as this method effects a distinct saving.

One of the Partition Tile Machines at the Fort Dodge Plant

ROOF TILE

Short span gypsum roof tile construction is by far the most flexible of any precast system. Gold Bond Roof Tile is accurately machine moulded and reinforced with electrical welded galvanized steel fabric. May be used on any type of factory or industrial building, power plants, schools and is particularly adapted to special pitched roofs that are cut up with hips, valleys or dormers.

Gold Bond Short Span Roof Tile requires sub-purlin supports. These are usually standard T sections but lightweight I-beams or channel sections may be used with economy up to 12 ft. They are made 3 in. solid, 12 in. wide and 30 in. long, extra dense and reinforced with electrically welded galvanized steel fabric placed near the bottom. The most economical span for standard 3 and 3¼ in. T's is from 6 ft. 7 in. to 7 ft. 4 in.

The tile is laid directly on steel supports without mortar and with the sides tight together, having full bearing on the sub-purlins. The grouting grooves are then filled with gypsum mortar and the roof is then ready for covering.

On sloping roofs, if channels are used for main purlins, they should open upwards in order to permit proper clipping of the sub-purlins.

Tie-rods are recommended for use on all roofs, using channel purlins regardless of slope or pitch.

Curb tile is used under sash, skylight frames, etc., and are made 3 in. x 15 in. x 30 in. The steel work should be laid out to accommodate a full or one-half 30-in. dimension.

Gold Bond Short Span Reinforced Roof Tile weighs approximately 17 lbs. per square foot. Is made of extra dense gypsum and because of the method of reinforcing is easily cut to fit job conditions.

The 3-in. solid roof tile has a high heat insulation value according to tests by recognized authorities of .41 B.t.u.'s per square foot per degree difference in temperature per hour. This excellent insulating property prevents the usual condensation which occurs on the under side of non-insulative constructions.

TABLE OF SIZES AND WEIGHTS

Size of Gold Bond Gypsum Partition Tile	For Ceiling Heights Up to	Weight of Tile Lbs. per sq. ft.	Weight of Mortar Lbs. per sq. ft.	Weight of Plaster (one side) Lbs. per sq. ft.	Total Weight Tile, Mortar and Plaster (two sides) Lbs. per sq. ft.
2" Solid ..... 12" x 30"	10 ft.	10.0	1.00	3	17.00
3" Hollow ..... 12" x 30"	13 ft.	10.0	1.20	3	17.20
4" Hollow ..... 12" x 30"	17 ft.	14.0	1.63	3	21.63
5" Hollow ..... 12" x 30"	20 ft.	17.2	2.04	3	25.24
6" Hollow ..... 12" x 30"	30 ft.	20.0	2.45	3	28.45

"CLIP-ON" SYSTEMS

Tested and satisfactorily proven Gypsum Lath Systems of construction for ceilings, furred walls and partitions

THE "Clip-On" Systems consist of complete assemblies of standard channels, patented "Clip" supports for special Gypsum Lath, and the application of Gypsum Plaster to completely finish any ceiling, furred wall or partition.

Solves Many Problems

Until the invention of "Clip-On" assembly in 1918, when providing for a suitable ceiling, furred wall or partition, almost every architect, builder and plasterer was confronted with the problem of selecting the proper type of structural members, determining their size and spacing, providing adequate fastening for the lathing materials and establishing the proper admixture and method of application for the plaster.

The "Clip-On" Systems, from the time of their inception, have provided a successful solution of all these problems. Specifying the "Clip-On" System, for the purpose desired, carries with it the assurance that:

(1) The metal parts will be of the proper kind, size and spacing to insure strength, rigidity and stiffness.

(2) The lathing background of gypsum lath will be adequately and firmly secured to the required supports by specially devised clips in such a manner as to provide an unsurpassed base for the plastering.

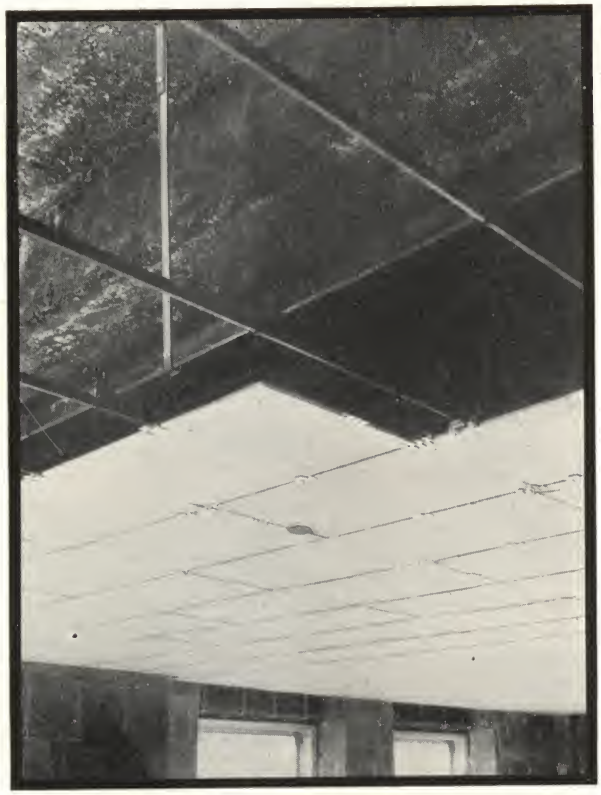
(3) The gypsum plaster will be permanently bonded to the fire resisting gypsum lath, presenting a true and unwavering plane throughout.

Simplified Construction

The simplicity of the "Clip-On" Systems can be readily seen from the photographs and descriptions that follow. In ceiling construction a rigid grillage composed of runner and furring channels fastened to hangers suspended from the floor construction above, is prepared quickly, requiring no special designs nor special materials. This is followed with the "Clip-On" Gypsum Lath which is fastened readily to the furring channels with the various types of clips provided for that purpose, as illustrated on the following page. The same conditions apply to furred walls or partitions which, in essence, are ceilings erected in a vertical position.

The "Clip-On" clips are of original design, and will fit any standard structural members used in the construction industry eliminating thereby the inconveniences and additional costs created by the use of special metal studs or supports. They are made of copper alloy galvanized metal, the gauge of the metal being heavy enough to take any load imposed. They are adapted to the erection of all types of partition and ceiling constructions.

"Clip-On" Gypsum Lath is made in units 16 x 48 x 3/8 in., to facilitate handling. They provide strength, fire resistance and lightness for the entire construction as well as durability through the waterproofing on the upper surface which prevents damage from external influences.



"Clip-On" Gypsum Lath Suspended Ceiling Furred Down from Concrete Floor Construction

Showing arrangement of hangers and extensions, runner and furring channels.

The "Clip-On" Systems are applicable to all types of building construction. Schools and hospitals have given preference to these systems because the perfect adhesion of the plaster to the gypsum lath eliminates all possibilities of falling plaster.

Long experience has proven that direct plaster to the underside of any floor construction does not yield the proper results. The "Clip-On" Gypsum Lath ceiling provides the solution as well as a more economical construction. The ceiling can be dropped to any desired distance below the floor construction and provides a uniform surface of equal density throughout so that "striping" and weakening of the bond cannot occur. This yields a level construction, stiff plastering base, maximum adhesion, straight plastering and a great saving in time. It is also worthwhile noting that there is a very definite saving in the total dead load in the use of metal tile forms and "Clip-On" ceiling as compared with clay tile construction and plastering directly to the tile and concrete. Painting and decorations can also be promptly applied and will not have to be constantly renewed.

"Clip-On" Plastering Materials

It has been definitely proven that one essential in "Clip-On" Systems is that "Clip-On" Bonding Plaster be used in applying the scratch and brown coats to the "Clip-On" Gypsum Lath, since it contains the necessary ingredients which will permit it to be spread on the Gypsum Lath to the specified 1/4 in. thickness. The Gypsum sets, crystallizes and becomes hard before all the moisture evaporates from the mixture, without affecting its elastic qualities to cope with the changes in temperature or other atmospheric conditions.

The "Clip-On" Bonding Plaster, exclusive of finish coat, is put on the various plaster backings as follows:

(1) **"Clip-On" Lath**—Ceilings, ¼ in. thick. Walls and partitions, ⅜ in. thick.

(2) **Metal Lath**—Front and through the lath, 1 in. thick.

(3) **Makite**—Brick and tile, ¾ in. thick.

(4) **Wood Lath**—½ in. thick exclusive of keys.

(5) **Concrete Surface**—⅛ in. for Scratch Coat. Balance of thickness with Brown Coat as required, to leave a level surface.

The quantity of sand added to each mix is governed by the type of plaster backing to be covered—using 180 lbs. of sand to 100 lbs. of "Clip-On" Bonding Plaster for the scratch coat on "Clip-On" Gypsum Lath, metal lath and wood lath. 250 to 300 lbs. of sand to 100 lbs. of "Clip-On" Bonding Plaster for Makite (brick and tile), and the brown coat on "Clip-On" Gypsum Lath, metal lath and wood lath.

In preparing the Scratch Coat, care must be taken that there is not too much sand mixed with the "Clip-On" Gypsum Plaster, since oversanding cuts down its spreading qualities.

The "Clip-On" Bonding Plaster is prepared so that it can be mixed by hand or machine. Should it be required that the material "set" faster, add a few handfuls of Portland cement or finishing lime to each batch, mix thoroughly and the desired results will be secured without endangering the quality of the material.

Note: The "Clip-On" Special Bonding Plaster is designed to meet such needs, that is, when the scratch, brown and finish coats must be applied on the same day. The Special Bonding Plaster is a quick-setting material and when used for Scratch and Brown Coats should be mixed with not more than 180 lbs. of sand to every 100 lbs. of Gypsum in small enough quantities to be used immediately. When used for Bond Coat on a concrete surface use 50 lbs. of sand to 100 lbs. of Special Gypsum. The finish coat can be applied within two hours after browning. *This material is designed for quick service retaining all the advantages of the regular Bonding Plaster which is used in the usual manner.*

Caution: In applying Special Bonding Plaster to a concrete surface make certain that all loose particles, dust, grease, or oil spots are definitely removed. Cover surface thoroughly with Scratch Coat, using 100 lbs. of Special Bonding Plaster to 50 lbs. sand. Follow up with Brown Coat in the usual manner.

The "Clip-On" Lime is made from the highest quality of lime rock obtainable in the Ohio fields.

The "Clip-On" Gauging Plaster and "Clip-On" Moulding Plaster are made from the same ingredients and answer the same purposes. The choice of the proper one for white coating, therefore, becomes a matter of the plasterer's preference. The moulding plaster, however, is best suited for cast and shop work.

For the man in the field there has been developed a complete series of large scale drawings which give and describe in detail the successive steps required in the erection of the "Clip-On" Systems. These drawings can be secured on request.

Advantages of "Clip-On" Systems

1—Assures plumb and level surfaces which can be ascertained before plastering is applied. Note particularly horizontal channels for suspended ceilings on 16-in. centers.

2—Materially reduces disorder incident to plastering and the amount of water content of unfinished building.

3—Reduces time required for completion.

4—Reduces quantity of plaster, since the minimum requirement on "Clip-On" Gypsum Lath is ⅜ in. there is a material reduction in plaster droppings.

5—Insures an even thickness of plaster.

6—Eliminates rust action as clips are made of copper alloy galvanized metal.

7—Excels in elasticity over competitive materials due to the homogeneity of materials.

8—Facilitates the erection and inspection of electric and other outlets, including ease of correcting errors.

9—Provides an air space or duct space in hollow partitions without extra cost.

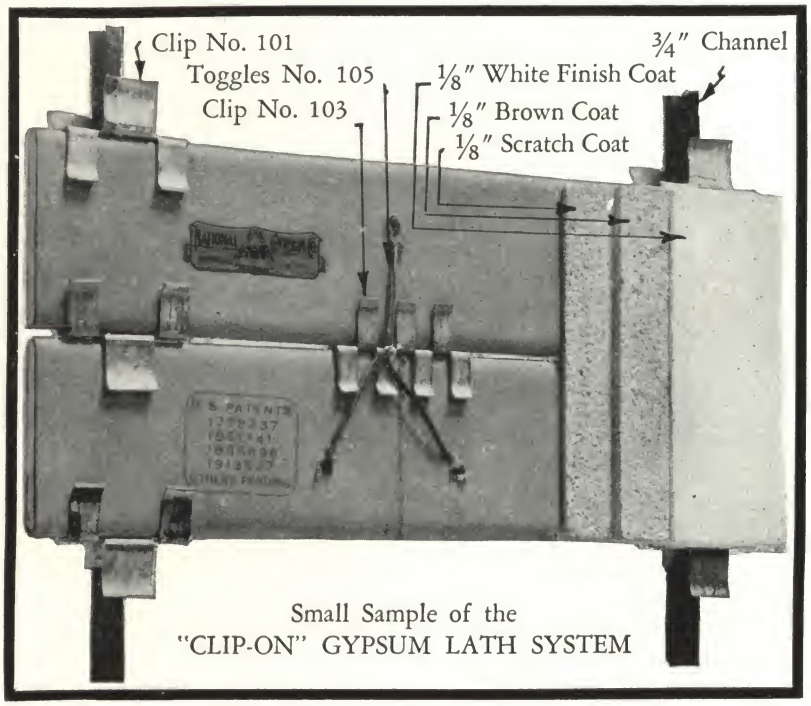
10—Reduces dead load approximately 45 lbs. per sq. yd. of surface and therefore effects economy in the structural frames. ("Clip-On" Gypsum Lath Suspended Ceiling Construction is estimated at 5 lbs. per sq. ft. as compared to metal lath ceiling at 10 lbs. per sq. ft.)

11—Dampproofing of reverse side of Gypsum Lath protects plaster and insures life of surface for a longer period than other competitive materials.

12—Effects substantial saving in cost per sq. yd. of ceilings.

13—The "Clips" can be applied or adapted to any rigid board and can be used in conjunction with any type of acoustic, insulating, etc., installations.

14—There is no risk of falling plaster from ceilings where "Clip-On" is used as the total plaster thickness is only ⅛ in. and the Gypsum Lath Units are toggled as well as clipped. Each "Clip" carries approximately 9 lbs. as the total of 45 lbs. per sq. yd. is carried by five No. 101 clips supported by ¾ in. channels. (Results of tests on the adhesion of gypsum lath made by the "Bureau of Standards of the U. S. Department of Commerce, Washington, D. C." are given in the "Clip-On" Manual. A copy will gladly be sent on request.)



Small Sample of the
"CLIP-ON" GYPSUM LATH SYSTEM

Gold Bond Products Are Manufactured in Modern Equipped Plants And Are Under Constant Supervision From the Time the Raw Materials Are Taken From the Mines Until the Finished Products Are Loaded in the Cars.

The Model Lime Mine at the York, Pa., Plant
This limestone is exceptionally pure and high in calcium oxide content

Loading Methods Approved by the Carrier Insure Contents Reaching Customers in Perfect Condition

Clarence Center Plant Located in the Heart of Western New York's Rich Gypsum Deposit

Section 2

GOLD BOND GYPSUM PLASTERS AND FINISH LIME

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GYPSUM PLASTERS AND PLASTERING SERVICES

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Gold Bond Wood Fibered Plaster
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GOLD BOND FINISHING PLASTERS:
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Gold Bond Prepared Trowel and Sand Float Finishes
Best Bros. Keene's Cement
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SPECIFICATIONS FOR LATHING AND PLASTERING

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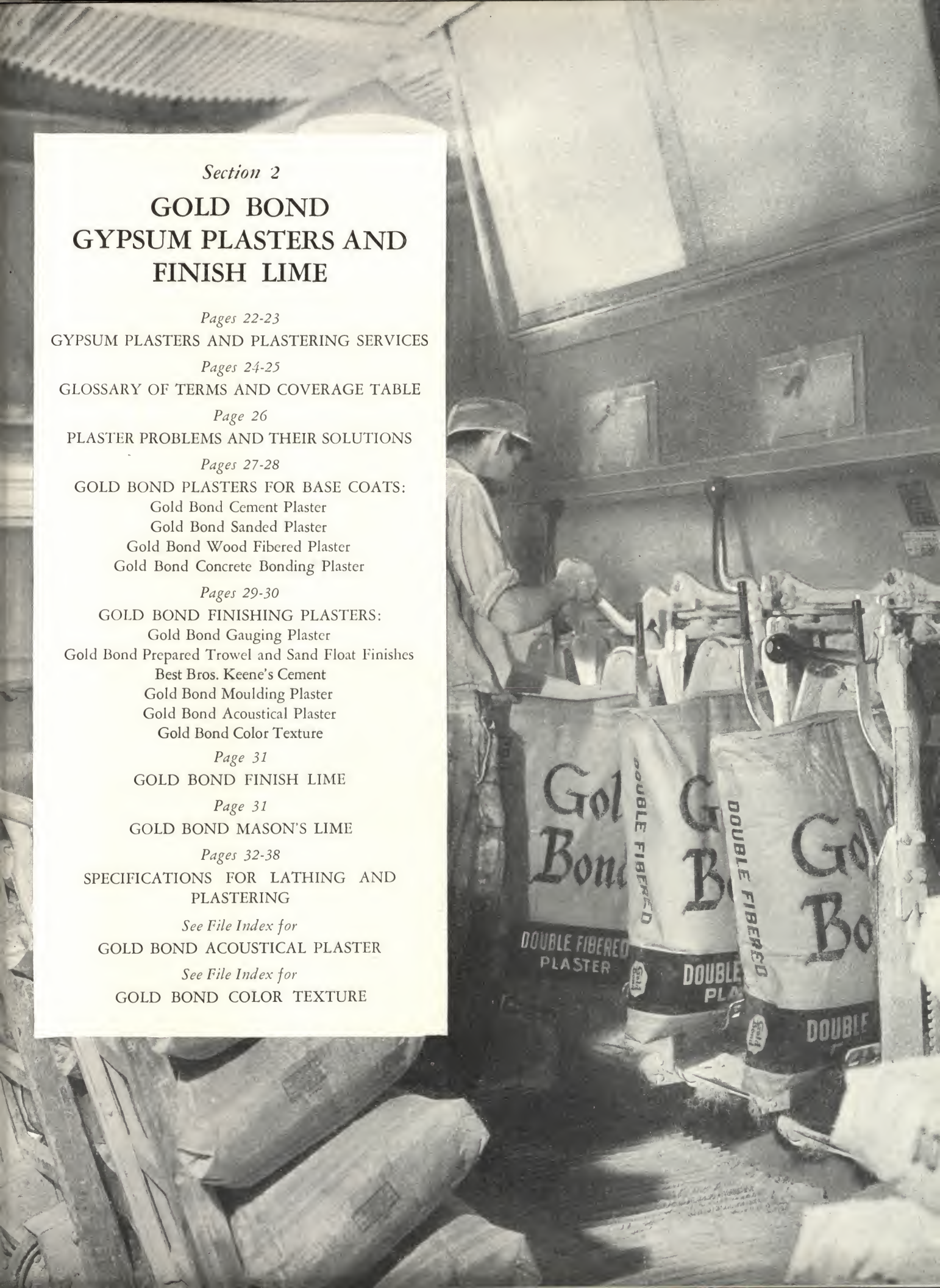
GOLD BOND COLOR TEXTURE



GOLD BOND . . . A COMPLETE PLASTER SERVICE

How Gold Bond supervises the quality of its plaster every step of the way from mine to finished wall.

GOLD Bond Plaster mines and quarries are located in the richest gypsum sections of the country, the vast deposits insuring approximately a hundred years' supply of exceptionally pure rock.

Purity Assured

Here in these mines and quarries daily tests are made to assure the constant purity of the rock—actual tests proving that the purity of the gypsum has a decided effect upon the strength and hardness of the finished wall. High purity also increases the coverage and smooth working qualities of the finished plaster.

Gold Bond spares no trouble or expense to obtain the purest gypsum rock, and then follows it by laboratory tests through every process of manufacture to the finished job.

Tested for Individual Job

For this purpose—suiting the plaster to the individual job—the Gold Bond laboratories are constantly testing specimens of sand from every part of the country where Gold Bond plaster is used. Samples are continually being secured to meet changes in local conditions.

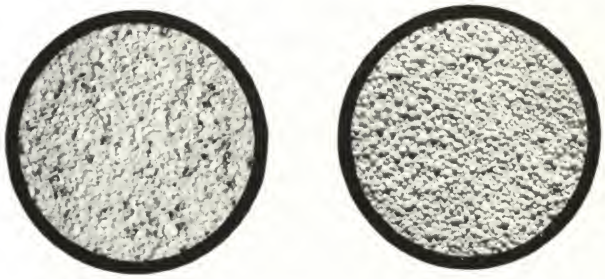
Before shipping, every batch of plaster is tested to meet the requirements of the particular sand of the vicinity into which the plaster is to be shipped. A somewhat costly process from the viewpoint of the manufacturer, but well worth the expense as it assures our customers of getting plaster that is particularly suited to their respective territories regardless of any unusual local conditions. New processes (patent applied for) insure uniformity of performance under all normal job variations and weather conditions.

Introduction of the new Gold Bond Microplastic Plaster in 1935 proves one of the greatest improvements in plaster history . . . .

Gold Bond Plasters have long been accepted as "standard" among the leading contractors of the country. Then in 1935, this enviable position was greatly enhanced by the introduction of a brand new plaster—Gold Bond Microplastic Plaster, produced after years of intensive research work.

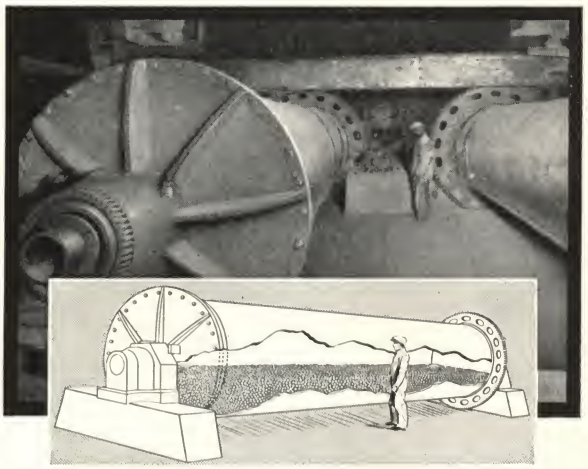
This improved method of processing has resulted in a product that is practically foolproof as far as application is concerned. Plasticity or workability has been increased 100% with far greater coverage. The new Gold Bond Microplastic Plaster met with instant approval and experts considered this to be the greatest forward step in the development of plaster in many years.

What the Micron-Sizing Process Actually Accomplishes



Before **After**

Note the contrast between these microphotos. At the left the plaster is coarse and flinty, while at the right the plaster after the Micron-Sizing Process has been broken down into millions of tiny particles and then rolled into soft, felted balls.



New Equipment and New Processes Enable Gold Bond to Offer a New High Quality in Plaster

Two of the huge mills which regrind the gypsum particles into micron sizes.

Bottom: An X-ray drawing of interior of mill showing the 100,000 manganese steel balls which do the pulverizing.

Scientific Principle of Micron Sizes and Their Effect on Plasticity

It is a well established scientific principle that in the setting of plaster a gelatinous plastic film is produced on the surface of the particles of calcined gypsum. Gold Bond, as one step in manufacture, regrinds the particles to micron sizes (1/25,000 inch). The enormous increase in area resulting greatly multiples the bulky gelatinous smooth working qualities.

GENERAL DATA

Characteristics and Application of Gold Bond Gypsum Plasters

The high grade gypsum rock used in the manufacture of all Gold Bond Plasters is hydrated calcium sulphate, containing approximately 20% of chemically combined water. In the calcination process most of this water is driven off, producing "plaster of Paris" which is the base of all gypsum plasters. On remixing with water on the job, the material takes back the water driven off in calcination and crystallizes or sets to the original gypsum rock.

In making Gold Bond Gypsum Plasters, small amounts of other materials are added to the basic "plaster of Paris" to control the time of set, working qualities, type of use, and particular market conditions of territory to which it is shipped.

May Be Used on All Plastering Bases

One of the many advantages of gypsum plaster is that it may be used on all types of plastering bases in addition to masonry surfaces. It may be used on gypsum, wood or metal lath; clay, concrete or gypsum tile or blocks; brick, concrete or other standard masonry plastering surface.

Dries Quickly

The advantages of the quick set and rapid drying qualities of gypsum plaster are very important in the completion of a building as well as reducing overhead. The usual time for a hard set is from 2 to 6 hours and complete drying in about 36 hours depending on weather and the season of the year. After drying there is no further sweating or dampness.

Adhesion Qualities

The particularly strong adhesive quality of gypsum plaster has been practically demonstrated in tests at the U. S. Bureau of Standards. It was conclusively shown that it does not depend entirely on mechanical keys but bonds on actual suction or adhesive qualities.

Durability

Gypsum plaster forms a hard, tough base for the application of finish coats or decoration. The tough base coats help the plaster wall to withstand rough usage which it may receive during the life of the building.

Low Coefficient of Expansion

After being applied, gypsum plaster remains inert and does not expand or contract even when subjected to fire. As it is made of gypsum it is absolutely incombustible.

Packaging

Shipped usually in 100 lb. paper bags; and some specialty products in 250 lb. barrels.

Above:
Gypsum Mine at Clarence Center, N. Y.

At Right:
Gypsum Quarry at National City, Mich.

GLOSSARY OF TERMS AND INFORMATION REGARDING PLASTERS AND THEIR USES

In view of the use of numerous local or descriptive names for the same type of plaster and widely varying market practices, it is felt that the following classification of plasters as to names and uses will be of considerable value:

BASE COAT PLASTERS

Cement Plasters

These plasters constitute the bulk of tonnage of all types of gypsum plasters used. The term relates to all Neat (the term Neat designating a plaster containing no sand or other aggregate added at mill) plasters either with or without hair or sisal fiber. (Wood Fiber Plaster is never classified as a cement plaster.)

Cement plaster is also called by the following names in many markets:

(a) Hardwall
(b) Patent Plaster
(c) Neat
(d) Compound
(e) Paristone
(f) Base Coat Plaster

Fibered and Unfibered Cement Plaster

Hair Fibered Plaster

Hair Fibered Plaster may contain either hair or sisal fiber. Sisal fiber is recommended as being more satisfactory than hair in plaster.

Unfibered Plaster

This designates only cement plaster containing no fiber.

Uses for Cement Plaster

This material is generally used for plaster work where good plaster sand is easily available and it is economically advisable to mix sand on the job rather than use a mill-mixed material. Cement Plaster is formulated for use with sand in amounts covered in directions and *should never be used Neat*—i.e., without addition of sand.

Sanded Plaster

This material is the same as Cement Plaster, except that a properly graded sand has been added at the mill in the proper amount for best plastering results. It has been called by many names listed under Cement Plaster except with the term Sanded used in addition.

Uses for Sanded Plaster

This material is used largely where good plastering sand is not easily available, where absolute exactness of proportioning of amount of sand is required, where facilities for mixing are limited, or job is not large enough to justify trouble of mixing sand on the job. Sanded plaster is used solely with addition of water on the job.

Wood Fiber Plaster

This type of plaster contains a finely shredded wood fiber and is made primarily for use with addition of water only on the job. In some cases, however, a small amount of sand (never over one part by weight) is added on the job. In some markets this material is known as Pulp plaster.

Uses for Wood Fiber Plaster

This material is used to a large extent for patch jobs, for work where an extremely hard wall is wanted, where base plaster is to be trowel finished, where sand is not easily available, etc.

Sanded Wood Fiber Plaster

This type plaster is on same general order as Wood Fiber Plaster except a small amount of specially graded fine sand is added. Its uses are the same as with Wood Fiber Plaster and it is used in certain markets where trade prefers a sanded wood fiber.

Concrete Bonding Plaster

This is a specially formulated wood fiber plaster to provide maximum bond to interior concrete surfaces. Ordinary gypsum or lime plaster does not bond properly to concrete surfaces. Water only is added in mixing on the job.

Bond Plaster

This material is the same as Concrete Bonding Plaster.

FINISH PLASTERS

Gauging Plaster

This is a specially ground calcined gypsum which may be either pure white or grey in color and quick or slow in set. Other names used to designate this material are as follows:

(a) Plaster of Paris
(b) Calcine
(c) Finish Plaster
(d) White Plaster (For pure white material only)
(e) Stucco

Uses of Gauging Plaster

This material is always used in connection with lime putty finish and is the essential ingredient which provides an initial set and prevents the slow setting lime from shrinking, checking and peeling before the set of lime itself takes place. The failure to use the proper amount of Gauging Plaster is the cause of most failures on lime putty finish jobs.

The type of Gauging used depends on trade practices in each locality. The following types of material are used:

(1) White Gauging—Quick Set
(2) White Gauging—Slow Set
(3) Grey Gauging—Quick Set
(4) Grey Gauging—Slow Set

Moulding Plaster

This is made from selected rock and specially prepared for requirements of its use. This is also sometimes called Plaster of Paris. It is used for plaster moulds, ornamental plaster work of all kinds and can be used as substitute for quick set Gauging Plaster. It is generally made as a pure white plaster but in a few localities Grey Moulding is used for special purposes.

Prepared Trowel Finishes

These plasters are gypsum finish plasters manufactured to avoid the problems involved in use of ordinary lime putty finish. They contain no lime but various ingredients are added to produce exceptionally easy working and spreading qualities. Water only is added on the job. They are also known as

(a) Smooth Trowel Finishes
(b) Gypsum Trowel Finishes

Uses of Prepared Trowel Finishes

These finishes are available as a substitute for lime putty finish whenever desired. They have replaced lime putty finish in some markets. They have the advantage of perfect bond to base, quick setting and freedom from danger of lime burn in decoration. These finishes can be safely decorated in any manner as soon as dry.

They are available in both grey and white.

Sand Float Finishes

These are also prepared gypsum finish with addition of fine sand. They are used in markets where the semi-rough surface of a sand float finish is desired. As name implies these materials are "floated," not trowel finished.

They are furnished in both grey and white.

Keene's Cement

This is an exceptionally hard gypsum finish fundamentally different from all other types of gypsum plasters.

It is a slow setting material which can be troweled with no danger of "killing" the surface and can be re-tempered in the box without damage to material.

Keene's Cement manufactured by Best Brothers at Medicine Lodge, Kansas, and sold by Gold Bond, has always been the leader in the field.

Uses of Keene's Cement

It is used wherever hard, extremely dense walls are required such as imitation tile bathrooms and kitchens or any places where walls are subject to unusual abuse. It is used as a finish in place of usual lime putty.

NATIONAL GYPSUM CO. GYPSUM PLASTERS

APPROXIMATE YARD COVERAGE PER TON ON VARIOUS PLASTERING BASES

Type of plaster	Gypsum lath	Gypsum insulating lath	Painted metal lath	Wood lath	Gypsum tile	Brick and clay tile	Concrete surfaces	Bags type weight, lbs.
Neat*	225-240 Sanded 1-2	225-240 Sanded 1-2	105-135 Sanded 1-2	180-210 Sanded 1-2	235-255 Sanded 1-3	165-200 Sanded 1-3	Use Bond Plaster	Paper 100 lbs.
Sanded	75-80	75-80	35-45	60-70	65-70	45-55	Use Bond Plaster	Paper 100 lbs.
Wood Fibered	115-120 Water only no sand	115-120 Water only no sand	56-65 Water only no sand	90-100 Water only no sand	.....	.....	Use Bond Plaster	Paper 100 lbs.
Bond		90 to 120 sq. yds., depending on smoothness of surface of concrete						Paper 100 lbs.
Gauging Plaster		1600 sq. yds. with 2 tons of hydrated lime						Paper 100 lbs.
Prepared Sand Float Finish		250-275 sq. yds.						Paper 100 lbs.
Prepared Trowel Finish		300-400 sq. yds.						Paper 100 lbs.
Keene's Cement		400-500 sq. yds.						Paper 100 lbs.

*Sanded 1-2 equals 1 part of plaster 2 parts sand by weight.
Sanded 1-3 equals 1 part plaster 3 parts sand by weight.

PLASTER PROBLEMS AND THEIR SOLUTION

Gypsum plasters are a highly sensitive chemical product and therefore subject to changes resulting from use under adverse conditions. A knowledge of the effect of these conditions on gypsum plasters as covered by the following table will insure the satisfactory correction of practically all plaster problems which arise:

SLOW SET: If plaster fails to set in 4 hours with all proper precautions.

REMEDIES: (1) Add amount Gold Bond Accelerator (usually handful to the bag is sufficient) necessary to give desired set. Sprinkle accelerator over dry plaster before mixing.
or (2) Add handful screened dry set plaster droppings same manner as accelerator.
or (3) Add quart hydrated lime or portland cement or 15 lbs. unretarded stucco to each bag of plaster.
or (4) Add alum or zinc sulphate in proportions two ounces per gallon water.

QUICK SET: If plaster sets in box or before it can be darbied.

REMEDIES: (1) Check to see if mixing box, tools and sand are clean and clean water used.
(2) Use retarder or ground glue in amount needed for desired set.

SHORT WORKING: If mortar works hard, does not carry sand, drops easily from wall.

REMEDIES: (1) See if material is stored in dry place.
(2) Add fresh plaster bag to bag.
(3) Add 2 shovelfuls slaked lime to each sack.
(4) Decrease amount sand and water.

PLASTER TROUBLES AFTER APPLICATION

IF PLASTERED WALL IS:	THE TROUBLE IS:	REMEDY:	TO PREVENT TROUBLE IN FUTURE:
Soft, white, chalky particularly over openings. Hot weather condition.	"Dry Out." Plaster dried before setting.	Spray walls with clean water. Keep wet till set.	Screen openings. Wet lath and floors. Avoid thin coats. If plaster slow set use accelerator.
Damp. Soft. Winter condition.	"Sweat Out." Plaster holds water and "rots."	After plaster is set open doors and windows. Supply heat.	Allow ventilation to hasten drying after plaster is set. Supply artificial heat in cold weather.
Soft, resembling sweat out—rooms have been at freezing temperature.	Walls are frozen.	Throw open building. Let walls freeze dry.	Keep walls from freezing until plaster is dry or at least 24 hours.
Soft, not due slow set or hot weather or retempering plaster.	(1) Too much sand. (2) Too fine sand.	None.	(1) Measure sand accurately. Do not use over 3 parts by weight. (2) Use other sand.
Wood lath. Cracks or bulges horizontal with lath. Straight vertical cracks.	Due swelling poor grade of lath or improperly spaced or failure to wet down. Failure stagger joints.	Remove and replaster.	Use No. 1 lath, white pine, cypress or spruce free from bark, sap, or knots. Space ¼" to ⅜" apart. Stagger. Wet lath before plastering.
Gypsum lath. Cracks around joints.	Too thin coat.	Apply second coat.	Use proper grounds.
Metal lath. Sags, cracks, does not adhere.	Too light lath, too open spaces, plaster not extra fibered. Plaster over sanded.	Reapply.	Correct conditions mentioned.
Brick or tile. Small cracks.	Failure wet before plastering. Too little sand. One coat work.	Float crack or apply more plaster.	(1) Wet tile before plastering. (2) Use 3 parts sand. (3) Two coat work.
Concrete. Poor bond.	Use of improper plaster. Unprepared surface.	Remove loose plaster. Condition wall. Apply bond plaster.	Surface must be rough, clean. Use concrete bonding coat.

GOLD BOND BASE PLASTERS

With Regard to A. S. T. M. Specifications

National Gypsum Company guarantees any Gold Bond Gypsum Plaster product to have about double the strength requirements and to exceed by a wide margin the purity required for any special plaster product in the A.S.T.M. Specifications and also every other detail of these specifications. This also applies to Government specifications.

GOLD BOND CEMENT PLASTERS

Neat Plaster for Base Coats—Fibered or Unfibered

Gold Bond Cement Plaster is "neat," not sanded, the sand being added at the job. Each shipment is prepared especially for the locality to which it is shipped and for the sand used in that locality. Fibered with hair or sisal fiber as ordered.

When mixed with sand it spreads well with a uniform working quality and with satisfactory results on the finished wall. On account of the purity of the gypsum it assures the maximum in sand carrying capacity, bulk and workability.

Note: Cement plaster should never be used neat—i. e., without adding sand.

Mixing and Proportions of Sand for Various Bases

After thoroughly mixing with sand, hoe plaster into water and bring to a uniform mix of proper consistency.

Scratch Coat on Gypsum, Wood and Metal Lath
Mix 1 part plaster with 2 parts by weight of dry sand.

On Brick and Gypsum or Clay Tile
Use 1 part plaster to 3 parts by weight of sand.

Brown Coat (Second) for All Plaster Bases
Mix 1 part of plaster to 3 parts of sand.

Application on Various Bases

On Gypsum Lath—Do not wet lath. Apply in 2 coats, scratching well in to fill joints between the lathing units. Brown coat to be darbied lightly and water used sparingly.

On Wood Lath—Soak lath 24 hours before and wet again an hour or two before plastering. Apply in 2 coats using sufficient pressure on scratch coat to obtain good key. Brown coat to be darbied lightly and water used sparingly.

On Metal Lath—Apply in 2 coats. Scratch coat to lightly cover lath and fill mesh. Scratch first coat and allow to set. Then apply brown coat, darby lightly and use water sparingly.

On Brick and Gypsum or Clay Tile—Soak brick or clay tile walls and sprinkle gypsum tile lightly before application of plaster. Apply in 2 coats. Darby brown coat lightly and use water sparingly.

Approximate Covering Capacity and Sanding

Plastering base	Gypsum lath	Wood lath	Metal lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	225-240 1 plaster 2 sand	180-210 1 plaster 2 sand	105-135 1 plaster 2 sand	165-200 1 plaster 3 of sand	235-255 1 plaster 3 of sand

Full ½ in. grounds should be used for best plaster work.

GOLD BOND SANDED PLASTERS

For Base Coats Where Prepared Sanded Plaster Is Desired

Gold Bond Sanded Plaster is the same as cement plaster but is accurately factory mixed and sanded with especially selected and graded sharp sand. It requires only the addition of water and mixing to be ready for use. It is useful for localities where good local sand is difficult to obtain or where accurately mixed material is wanted.

It is also desirable for use during the winter as it eliminates the need for drying sand which is wet and frozen or for trying to secure unfrozen sand.

It is also useful for remodeling and repair work as it may be mixed inside the building.

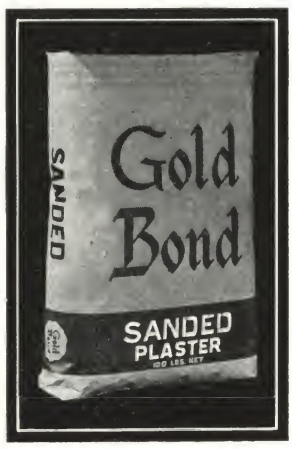
Mixing—Add nothing but water, hoeing plaster into water and mixing thoroughly. First mix thin, then add dry material to bring to proper consistency.

Application on Various Bases—Gold Bond Sanded Plasters are applied to the various plastering bases in the same manner as for Cement Plaster (see description above).

Approximate Covering Capacity

Plastering base	Gypsum lath	Wood lath	Metal lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	75-80	60-70	35-40	45-55	65-70
		No sanding required—add water only			

At Left
Gold Bond Cement Plaster Bag



At Right
Gold Bond Sanded Plaster Bag

GOLD BOND WOOD FIBERED PLASTER

Used for Base Coats Except on Brick and Gypsum and Clay Tile

Unsanded or "Neat" Wood Fibered Plaster is a gypsum plaster containing finely shredded wood fiber and requires only the addition of water to be ready for use. It does not require sand but in some localities 1 part, by weight, of sand is added.

The wood fibered plaster when used unsanded avoids dangers of over-sanding and works and spreads freely and easily. The plaster is about two-thirds lighter in weight than sanded plaster. The wood fiber acts as a reinforcing and produces a dense, tough, strong and durable base, especially for troweling. It is superior in fire resisting and sound deadening qualities to sanded plasters and will stand up where strains and vibrations are encountered. It saws like wood. It is especially adapted for winter work and alterations as it is easily handled.

Sanded Wood Fibered Plaster—Same as unsanded but is shipped factory mixed with proper amount finely graded sand.

Mixing for Application on Various Bases

Hoe plaster into water and allow to soak from 10 to 20 minutes, then mix to the proper consistency.

Scratch Coat—Use "Neat" for wood, gypsum lath and metal lath.

Brown Coat—Use "Neat" for wood and gypsum lath and "Sanded" for metal lath.

Note: Do not use either on Brick and Gypsum or Clay Tile.

Application on Various Bases

On Gypsum Lath—Do not wet lath. Apply in coats scratching well to fill joints between the lathing units and scratch surface. Allow first coat to dry then apply brown coat and broom surface before it sets.

On Wood Lath—Soak lath. Apply in coats, applying scratch coat with sufficient pressure to obtain proper key and scratch surface. Apply brown coat and broom surface before it sets.

On Metal Lath—Apply in two coats, applying scratch coat, of stiffer consistency, to cover lath and fill mesh. Apply brown coat and broom surface before it sets.

On Brick and Gypsum or Clay Tile—

Note: Wood Fibered Plaster is not recommended for use on these bases.

Approximate Covering Capacity

Plastering base	Gypsum lath	Wood lath	Metal lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	115-120 Unsanded add water only	90-100 Unsanded add water only	55-65 Unsanded add water only	Not recommended on these bases	

GOLD BOND CONCRETE BONDING PLASTER

For Base Coats on Interior Concrete Surfaces

This plaster is made especially to bond to concrete surfaces, on which ordinary gypsum or lime plasters will not adhere properly. It is used for scratch and brown coats. Only water should be added on the job. Do not use with sand.

All surfaces of concrete must be dry, absolutely clean, free from oil and efflorescence and should be roughened if the surface is troweled smooth.

The plaster should be applied in two thin coats just thick enough to make a smooth wall and not over ⅛ in. total thickness. Any plaster finish may be used over the bonding plaster. The finished surface should not be decorated for a year in order to allow time for any moisture in concrete to work out.

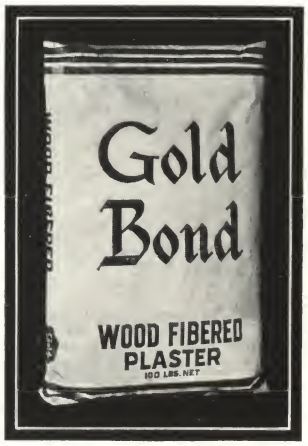
Mixing and Application

Mixing—Add nothing but water and hoe plaster into the water, allowing to soak for 10 to 20 minutes, then mix thoroughly to a smooth creamy consistency.

Application—Apply in 2 coats—First coat shall be scratched on as thin as possible, scratched and allowed to dry. Apply second coat just thick enough to level up inequalities with total thickness not over ⅛ in. for both coats. Scratch the surface of bond plaster thoroughly to provide mechanical key for finish.

Approximate Covering Capacity

Approximately from 90 to 120 sq. yards per ton, depending on roughness of concrete and thickness applied.



Gold Bond Wood Fibered Plaster Bag

Gold Bond Concrete Bonding Plaster Bag

GOLD BOND FINISHING PLASTERS

With Regard to A. S. T. M. Specifications

National Gypsum Company guarantees any Gold Bond Gypsum Plaster product to have about double the strength requirements and to exceed by a wide margin the purity required for any special plaster product in the A. S. T. M. Specifications, also every other detail of specifications. This also applies to Government specifications.

GOLD BOND GAUGING PLASTER

For Gauging Gold Bond Lime Putty Finish

Gauging plaster is a specially selected, ground, calcined gypsum used with lime putty plasters to quicken the set of the lime putty and prevent checking of lime finish.

It may be either quick or slow set. It is uniformly ground to a fineness to insure easy mixing and working qualities. It is also known as Plaster of Paris.

Types

Slow Set—

Gold Bond Super White Slow Set (White).

Gold Bond Sapphire Slow Set (Gray).

Quick Set—

Gold Bond Super White Quick Set (White).

Gold Bond Sapphire Quick Set (Gray).

Directions for Mixing

Use as directed under Gold Bond Finishing Lime.

Covering Capacity

Under normal conditions one ton of Gauging Plaster to two tons of hydrated lime by weight will cover approximately 1600 sq. yds.

GOLD BOND PREPARED TROWEL AND SAND FLOAT FINISHES

For White or Sand Float Gypsum Finishes Over Gypsum Base Coats

These prepared gypsum plasters are for use as finish over gypsum base coats in place of lime putty finish. They make a perfect bond with the gypsum plaster base coats. They have exceptionally easy working and spreading qualities, set quickly and walls may be decorated in any manner as soon as they become dry. There is no danger of lime burns in decorations.

Sand Float Finishes contain clean sharp silica sand which has been screened, graded and dried. This sanded plaster is especially recommended for use in winter when it is difficult to secure the proper sand.

Mixing and Application

Mixing—Hoe plaster into water (adding 2 parts of plaster to 1 part of water by volume) and allow to soak for 10 minutes. Mix thoroughly to produce a smooth creamy consistency and add water until very thin.

Trowel Finish—Base coat must be hard and at least half dry before finish is applied. If suction is too great sprinkle base with water. Apply in three coats, the first coat very thin, well scratched into the surface. Allow to draw for a few minutes then lay on second coat and level off. Apply third coat very thin, filling in all imperfections and allow to draw for a few minutes. Then trowel to smooth finish, applying water sparingly with brush and complete troweling before plaster sets.

Sand Float Finish—Base coat must be hard and about half dry before finish is applied. Trowel on and finish with a float to true and even surface, using water sparingly from a damp brush and complete before finish sets.

Gold Bond Gauging Plaster Bag

Gold Bond Prepared Trowel Finish Plaster Bag

BEST BROS. KEENE'S CEMENT

For Hardest White Finish Coat

This is an exceptionally hard and dense gypsum finish and is fundamentally different from all other gypsum finishes. It is slow setting plaster which can be trowelled without danger of killing the surface. The surface takes a very hard glass-like polish. It is ideally adapted to decorative treatments and does not affect the most delicate color as it is non-staining, non-acid and non-corrosive.

It is used wherever extremely hard and dense finish is required as for installation tile and in wainscotes in schools; auditoriums or any other place where walls are subject to unusual abuse.

This product is manufactured by Best Bros. at Medicine Lodge, Kansas. It has been specified for years by architects and recognized as a standard in this field.

Mixing and Application

Mixing—For hardest finish use Keene's Cement neat. For Hard finish use 100 lbs. of Keene's Cement and 25 lbs. of lime putty. For Medium Hard use 100 lbs. Keene's Cement and 80 lbs. of lime putty.

Application—Apply same as Gold Bond Prepared Trowel Finish.

GOLD BOND MOULDING PLASTER

Gold Bond Moulding Plaster (Plaster of Paris) is made for use in ornamental plaster work. It is made from selected gypsum rock of greatest purity and whiteness and undergoes special preparations for the purposes for which it is used. The purity of the gypsum deposits of the company allows the production of moulding plaster of the very finest quality. It makes an especially smooth working plaster of uniform set. It is ground finer than other gypsum plasters and permits a finer surface and greater freedom from pin holes.

On account of its hardness and great strength after setting it is used for plaster moulds and ornamental work of all kinds. The plaster sets with little heat resulting in low expansion and contraction, especially desirable when used in moulds. The low temperature does not affect glue or gelatine moulds. It is used for running mouldings, cornices and ornamental uses of a similar type as it can be worked so smoothly and produces a perfect, smooth surface.

Mixing Directions

Mix with water only and bring to proper consistency for use.

GOLD BOND ACOUSTICAL PLASTER

National Gypsum Company produces two types of acoustical plaster:

1. Gold Bond Standard Macoustic for use where a textured finish is desired.

2. Gold Bond Smooth Finish Macoustic for either a smooth trowelled or floated finish.

Both products are entirely mineral in composition, sanitary and absolutely fireproof. Recommended for all types of new buildings where acoustical treatment is desirable, including Auditoriums, Theatres, Hospitals, Public Buildings, Radio Station, etc. Macoustic Products are described in our Acoustical Plaster section. (See File Index.)

GOLD BOND COLOR TEXTURE

An especially prepared material for use on any type of wall where textured finishes are desired. Made in six ready mixed colors and white. It is waterproof, easy to mix and apply and the work is completed in one operation as soon as applied. No tinting or glazing is necessary. See catalogue on this, for color samples and complete description in another section.

Best Bros. Keene's Cement Bag

Gold Bond Moulding Plaster Bag

GOLD BOND FINISH LIME

Gold Bond Lime from Famous Ohio Lime Country

The very finest lime deposit in the world is that in the northwestern Ohio dolomite lime fields. This is located a few miles south of Toledo and by far the largest quantity of finish lime produced in the country comes from producers located within an area of a radius of about five miles.

Gold Bond Lime is produced in this area at our plant at Luckey, Ohio, and the purity of the lime ranks with the finest produced in this high quality lime producing section.

The Quality of Dolomite Limestone

The chemically pure dolomite limestone contains 45.5% magnesium carbonate and 54.5% calcium carbonate. A. S. T. M. specifications require a 95% minimum oxides of the two combined. The Gold Bond deposits average between 98% and 99% containing 55.56% Calcium Carbonate and 43.41% Magnesium Carbonate.

It is the magnesium carbonate, when properly burned which gives the plasticity and easy slip or working qualities of a building lime. It is due to the quality of plasticity that the dolomite lime is so favored by the trade. Limes of high calcium content are not as easily worked as the Ohio dolomite lime.

Automatic and Machine Controlled Burning of Lime

One of the important steps in the production of good lime is in the proper burning of the magnesium carbonate. As the calcium and magnesium carbonate require widely different temperature to change them to oxides by burning, it requires very careful regulation of heat. The National Gypsum Company have patented and installed apparatus which definitely controls the burning automatically as against depending on the skill of a fireman in control of his fires, so that overburning is a practical impossibility. Overburning makes the lime tough and hard working without "slip" and will not hold its water against the suction of the wall.

Hydration Scientifically Controlled

The process of hydration is also absolutely and automatically controlled by the equipment of this company. Lime as it comes from the kiln exists as calcium and magnesium oxides. A definite percentage of water is added which combines chemically with the calcium oxide but *not* with the magnesium oxide. The lime is then ground and sacked.

The Reason for Soaking Lime Overnight

The small amount of water used in hydration does not combine with the magnesium oxide. When soaked overnight, the magnesium oxide slowly reacts and forms a "jelly" which produces the slip and easy working qualities of the Ohio dolomite lime. It will therefore be readily seen that the more perfect the hydration of the magnesium the greater the plasticity of the lime.

Plasticity the Test of Quality of Gold Bond Lime

One of the most important tests of lime is that of its plasticity. In the Federal Standard Stock Catalogue, SS-L-351, Section IV, Part 5, E-6, it requires that finishing hydrated lime shall have a plasticity figure of not less than 200. The minimum value which our plant specifications allow to be shipped as finish lime is 300.

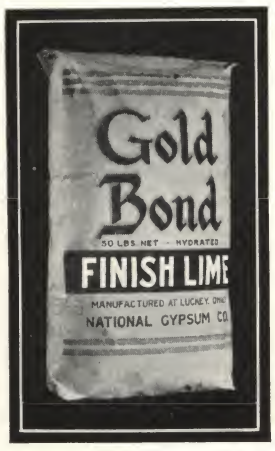
Mixing Gold Bond Finish Lime—Fill water tight box about two-thirds full of clean water. The dry lime should then be sifted gradually into the water until fully soaked. Enough excess water to provide 1 to 2 inches of water over the lime should be supplied. Soak overnight. In application, mix 3 parts of lime putty by 1 part of dry gauging plaster by volume. Mix thoroughly.

Covering Capacity—Under average conditions, the proportions specified should cover approximately 500 to 700 square yards per ton of lime. Shipped in 50 lb. paper bags.

GOLD BOND MASON'S LIME

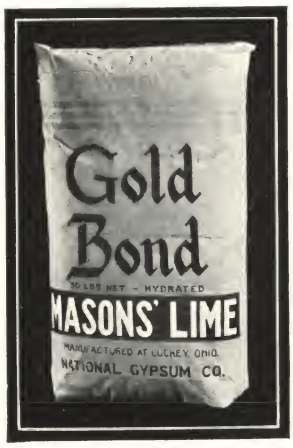
This is a hydrated lime for use with lime cement and sand, or lime and sand mortars, or for concrete construction. It is used by mason contractors wherever a good easy working lime, which will bulk well in putty is required. This lime is manufactured especially for its particular uses.

Gold Bond Finish Lime Bag



Gold Bond Finish Lime, produced at Luckey, Ohio, ranks with the finest to be had in this high quality lime producing section.

Gold Bond Mason's Lime, a hydrated lime of high quality, is used by mason contractors wherever a good, easy working lime that bulks well in putty, is demanded.



Gold Bond Mason's Lime Bag

N A T I O N A L G Y P S U M C O M P A N Y

MASTER SPECIFICATIONS FOR INTERIOR LATHING AND PLASTERING

GENERAL NOTES

Uses of Master Specifications

It is intended that the following specifications will cover practically all conditions which are usually met with in ordinary construction. Only the paragraphs applying to the particular type of job should be selected and used by the architect. Special lathing bases are not included and if these are used the method of application and use of plaster should follow the recommendations of the manufacturer.

Consulting Service on Lathing and Plastering

The National Gypsum Company has over a hundred and fifty representatives located throughout its territory who will be glad to consult with architects and lathing and plastering contractors on any lathing or plastering problems which may arise. This is in addition to the technical laboratory and research department located at the Buffalo Office which may be called upon at any time for technical information.

New and Old Work

The following specifications are written only for new work. For alteration work the clauses will have to be altered to cover such work especially in regard to where old and new work join.

SECTION 1

LATHING AND PLASTERING SPECIFICATIONS

Note: (a) Acoustical Plaster—Gold Bond Macoustic is not included in this specification. See the National Gypsum Company catalogue and specifications on acoustical treatments and materials.

(b) Insulating Lath—Gold Bond Insulating Lath is not included in this specification. See the National Gypsum Company Catalogue and specifications on Insulation.

(c) If trade practice requires separate specifications for lathing and for plastering, the specification should be written accordingly.

1. General Conditions

The General Conditions of the Contract of the American Institute of Architects (current edition) shall form a part of this specification. (If the A.I.A. Standard Form is not used then refer to the one used.)

2. Scope

2–1. This contractor shall furnish all materials, labor, scaffolding and staging which will be required to satisfactorily complete the lathing and plastering work to be executed as hereinafter described or indicated on the contract drawings or schedules.

3. Extent of Work—Furring, Lathing and Plastering

3–1. All Metal Furred or Suspended Ceilings

Note: Wood furring or hung ceilings should be specified under carpentry.

3–2. All metal wall furring and miscellaneous metal furring

3–3. All metal stud partitions

3–4. All lathing

3–5. All interior plastering including Keene's Cement as follows:

Note: Here describe exceptions and amplifications in regard to lathing and plastering or refer to schedule of finishes and drawings.

- **a.** Note where plaster is to be omitted.
- **b.** Note where one or two coat plaster is required.
- **c.** Note where white finish is omitted.
- **d.** Note ceiling or beams, cornices, etc., to be furred (Type furring)
- **e.** Note walls to be furred (Type furring)
- **f.** Note if lath or base and scratch coats back of tile work, marble or slate are to be included or omitted from this contract.

4. Relations with Other Trades

4–1. **Temporary Enclosures** — Temporary cloth enclosures over all window and other exterior openings throughout the portions of the building to be plastered shall be provided and maintained by the carpenter during application and drying of plaster.

4–2. **Temporary Heat, Light and Water**—Shall be supplied by others.

Note: Plastering Contractor or General Contractor may be required to supply salamanders, fuel, heat and maintenance without fire hazard before heating plant is installed, depending on contract agreements. After heating system is installed heat may be supplied by heating system through the General Contractor or Owner.

4–3. **Grounds and Furring**—All necessary wood grounds for furring and lathing shall be installed by others.

4–4. **Inspection of Grounds and Plastering Bases**—All grounds and plastering bases shall be inspected by this contractor from time to time and before commencing his work and he shall report to the Architect and General Contractor any defects in such work which may in his opinion affect satisfactory finish, accuracy and stability of the work under his contract.

4–5. Failure to report such defects requiring correction or replacement before commencing his work shall be construed as acceptance of such work by this contractor and he shall not be relieved of responsibility and obligation under his guaranty.

5. Protection of Work and Building

5–1. All finished work, such as woodwork and glass, shall be adequately protected by Contractor from damage and plaster droppings and he shall make good such damage at his own expense and without cost to the owner.

5–2. Furnish, install and maintain waterproof protection at source of water, under all mixing boxes and gauging barrels.

5–3. Any spill or drip of any kind shall be taken up at once and any sand, sawdust or protection for floor if removed shall be replaced with new material.

5–4. This Contractor shall be responsible for all damage occasioned by the mixing, handling and storing of mortar and materials or through his failure to provide necessary protection.

6. Patching

6–1. All plaster work which is damaged by this Contractor shall be made good by him at his own expense.

6–2. After the erection of finish by other trades, this Contractor shall patch all plaster which is damaged by other mechanics but the cost shall be paid for by the Contractor who caused the damage.

6–3. This Contractor shall cut out, when required, any defect in his work and replaster and leave in perfect condition.

7. Preparation of Surfaces

7–1. This Contractor shall clean the surface to which or against which plaster is to be applied, removing all mortar droppings, etc., as may be necessary, to allow plaster to adhere to same.

7–2. Concrete surfaces and combination tile and concrete surfaces which are too smooth to receive plaster shall be sufficiently roughened by hacking to secure adequate bond.

Note: (Hacking will be done by others.) Concrete forms should be made of rough boards and be free from oil.

7–3. Concrete surfaces shall be dry and brushed free from dust, soot, grease and oil. (Burn off oil or grease with torch.) Any low places in masonry walls shall be filled out and any unevenness shall be straightened with unfibered plaster ahead of base coat.

7–4. Efflorescence shall be removed with a wire brush and washed with muriatic acid and water, one (1) to five (5) solution. Remove acid by thorough washing with clean water.

7–5. Wood Lath shall be wetted down as specified under Wood Lath, Sec. 5, Par. 1-1-1.

7–6. Gypsum lath and fiber insulating lath shall not be wetted down at any time.

7–7. Where necessary for suction, wet brick, concrete and clay tile surfaces before plastering.

8. Wood Grounds

All wood grounds shall be provided and installed by the Carpenter and shall be of such thickness and so set to provide for ½ in. thick plaster over all types of laths and gypsum tile and ⅝ in. thick plaster over all brick, clay tile and other masonry.

Wood Lath	¾ in. grounds
Gypsum Plaster Board ⅜ in. thick	⅞ in. grounds
Gypsum Plaster Board ¼ in. thick	¾ in. grounds
Insulating Board ½ in. thick	1 in. grounds
Metal Lath—Expanded, Sheet and Wire	¾ in. grounds
Gypsum Tile	½ in. grounds
Brick and Clay Tile	⅝ in. grounds

Note: Thickness of grounds includes thickness of lath.

9. Sample Finishes

Where special textured finishes are required, this Contractor before proceeding with the work shall prepare and erect, where directed by the Architect, sample panel of each finish required, not less than 3 ft. square. These samples shall be made to the satisfaction of the Architect. After approval by the Architect, the finished work shall equal the samples in all respects.

10. Workmanship

All work shall be executed by skilled workmen in such a manner as to fulfill the requirements of the drawings and specifications.

11. Cleaning

11–1. After completion of his work, this Contractor shall remove from the building all scaffolding and tools of every sort used by him, taking care not to damage work of the other trades.

11–2. All plaster rubbish, plaster droppings, etc., shall be removed by this Contractor and the building left broom clean.

11–3. (This Contractor shall remove all plaster from glass and other finish and leave in first class condition.)

11–4. (The removal of debris and cleaning required, resulting from the work of the Contractor, shall be done by others.)

12. Guarantee

12–1. This Contractor shall furnish a written guarantee as a part of this contract, warranting all work and materials under this contract against defects for a period of (one year) (specifying time) from the completion and acceptance of the work as shown by date of final payment and he binds himself to repair and replace any defect which may develop within that period, without additional payment beyond the amount of the contract, when ordered to do so by the Owner or the Architect.

12–2. (This shall also include the cost or repairs or replacement of any material, decoration or other finish damaged by the defects.)

SECTION 2
FURRING AND SUSPENDED CEILINGS

1. Wood Furring and Suspended Ceilings

Note: Wood furring and suspended ceilings which are to be plastered should be included under Carpentry.

2. Masonry Furring

Masonry furring such as hollow blocks of tile, etc., should be included under Masonry.

3. Materials

3–1. Metal Furring—Shall be Gold Bond Cold Rolled Channels. (See page 16.)

3–2. Metal Partition Studs—Shall be Gold Bond Cold Rolled Channels of sizes specified.

4. Metal Furred Suspended Ceilings

4–1. Location—Ceilings shall be furred or suspended with metal furring where so indicated on plans or on schedules. Where finished surfaces of plastered ceilings are six (6) in. or more below the soffit of floor construction, they shall be considered as suspended ceilings.

4–2. Hangers—Shall be placed not to exceed 4 ft. center to center in either direction. The minimum size for hangers shall be No. 8 galvanized wire, 1 x $\frac{3}{16}$ in. flats or $\frac{7}{32}$ in. round mild steel rods.

The upper ends of hangers if wire, rods or flats, shall be of sufficient length to wrap around beams or provide a suitable anchorage in concrete or tile. Where steel beams or purlins are not more than 4 ft. center to center, hangers may be attached directly to them. When hangers are hung from concrete beams or arches, the hangers shall be placed before concrete is poured. When ceilings are hung from terra cotta floors, hangers may be installed at tile joints during erection, or may be installed after tile is in place, holes bored clear

through tile and secured on upper side by steel rod or toggle bolt.

4–3. Runner Channels—Shall be placed not to exceed 4 ft. on centers, and shall be not less than 1½ in. cold or hot rolled channels weighing not less than 442 lbs. per thousand lineal feet. Lower end of wire hangers shall be secured to runner channels by three twists around same; lower end of rod hangers shall be secured to runner channels by two twists, or by wiring; lower end of flat steel hangers shall have holes punched at the proper distance to which the runner channels shall be bolted with not less than ⅜ in. diameter bolts.

Runner channels shall conform to the contour of the ceiling.

4–4. Furring Channels—Shall be not less than ¾-in. channels with a minimum weight of 276 lbs. per thousand lineal feet; they shall be erected at right angles to the runner channels of No. 16 galvanized annealed wire at each crossing, or by No. 9 wire hairpin clips.

Furring channels shall be spaced as follows:

Not over 12 in. apart for 3.0-lb. flat expanded metal lath is used, or over 16 in. apart for 3.4-lb. flat expanded metal lath; not over 16 in. apart for 3.0-lb. flat rib expanded metal lath; not over 19½ in. apart for 3-lb. ⅜-in. rib expanded metal lath; and not over 24 in. where 3.4-lb. ⅜-in. rib expanded metal lath is used.

4–5. Metal Lath—Shall weigh not less than 3.00 lbs. for ceiling and 2.50 lbs. per sq. yd. for side walls, provided, however, that minimum weight shall be governed by spacing of furring channels as specified in the preceding paragraph.

The metal lath shall be wired to the furring channels (the long dimension of the sheet being across the channels) by No. 18 gauge galvanized annealed wire every 6 in. along the furring channels; there shall be one tie on side laps half way between channels. Lap sheets at sides and ends not less than 1 in.

Where ceilings, cornices or other features, formed with metal lath, finish against masonry walls, partitions or arch soffits, the lath shall extend onto masonry surface at least three (3) in.

4–6. Brackets for cornices, beams, etc., shall be built up of 1-in. steel members spaced same as for runner channels and shall be securely fastened to masonry or other structure supports. Cross fur and lath same as for ceilings.

5. Metal Stud Partitions

5–1. Solid Partitions—

(a) Metal Studs for solid partitions shall be not less than ¾-in. cold or hot rolled channels weighing not less than 276 lbs. per thousand lineal feet, and spacing of studs shall conform with weight of lath as in paragraph (a) of these specifications.

(b) Studs shall be secured in position by inserting ends in holes punched ¾ in. in top of concrete or other masonry floors or in soffits of masonry ceilings, or by attaching to stud shoes, or by placing ends in holes drilled in wood floor bucks anchored to masonry floors at 4-ft. intervals; on floors by wire-tying to nails driven 1 in. into floors and projecting at least 1 in. above. Where metal lath ceilings are used, a small hole shall be made in the ceiling lath and the end of channel allowed to project through it and be wired to a channel attached to the ceiling lath.

(c) Splicing of studs shall be made by lapping channels not less than 8 in. with flanges interlocked and tied.

(d) Erection of metal lath, for solid lath and metal stud partitions, shall be the same as that given in Par. (1) excepting that metal lath is applied only on one side of channel studs and tied instead of nailed or stapled.

(e) **Note:** Solid partitions over 6 ft. high shall be temporarily braced horizontally on the channel side at intervals not exceeding 6 ft. vertically before applying plaster. Such bracing shall not be removed until scratch coat on the lath side of the partition has set.

(f) In every case one channel shall be set next to wood buck at each side of openings and double-wired securely to 8d nails driven on each side of channel in pairs into buck at 2-ft. intervals. Bottom of door buck shall be securely spiked to wood plug in floor, or attached by metal anchors.

5–2. Hollow Metal Lath Partitions — Use Specifications (5-1) but call for wide single channel, or a double row of ¾-in. channels with separators every 2 ft. vertically, and metal on both faces of partition.

6. Metal Wall Furring

6–1. Where wall furring is indicated on plans or in schedule for walls, beams, girders and other vertical surfaces, it shall consist of ¾-in. vertical channels spaced not more than (specify spacing) (12-in.) on center and shall extend from floor to ceiling arch and be firmly secured top and bottom. Intermediate braces shall be provided as specified for metal stud partitions. Flanges shall face masonry and shall be secured with special hook nails or other device best suited to the masonry or mortar joints.

6–2. Pipe and Ducts—Pipe and ducts required to be enclosed shall be furred as specified for wall furring. Where required to support plumbing fixtures, additional horizontal members of 1½ x $\frac{5}{16}$ in. flats shall be wired to vertical members at proper heights to support fixtures.

6–3. Pipe Chases—Over 12 in. wide shall be furred in same manner as wall furring with metal lath extending at least 3 in. each side of opening.

6–4. Heads and Jambs—Fur and lath heads and jambs of windows and doors, when specified or indicated to be plastered, in same manner as for wall furring.

6–5. Corner Beads—Corner beads shall be installed on all exterior angles in plastered rooms or spaces to run from floor to metal corner bead or to spring line of arches where arch heads are used and shall be of type and gauge as specified under materials.

6–6. Metal Grounds—Shall consist of heavily galvanized steel and shall be set true to plane of finished wall surface and shall be securely fastened to the masonry, furring or other support.

6–7. Miscellaneous Furring—(List here other miscellaneous furring required as for stair soffits and any special features requiring metal furring and lathing.)

6–8. No furring shall be placed until all pipes, conduits, etc., have been permanently placed.

6–9. General—All furring and lathing, for all vertical or horizontal surfaces for walls, cornices, beams, arches, carved work, etc., shall be level, plumb true and rigid and accurately formed so that all surfaces to receive plastering shall be generally one (1) inch back of finished surface.

SECTION 3

LATHING AND PLASTERING ACCESSORIES

1. Materials

1–1. Wood Lath—Shall be No. 1 Grade, or better, free from knots, sap and bark, approximately ⅜ in. thick, 1½ in. wide and either 32 in. or 48 in. long.

1–2. Gypsum Lath—Shall be Gold Bond Gypsum Lath ⅜ in. thick (or ¼ in. or ½ in. thick)—16 x 32 in. or 16 x 48 in. Also 24 x 32 in. and 32 x 36 in.

1–3. Metal Lath—Shall be Gold Bond Metal Lath, National Gypsum Co. (specify type, finish and weight for spacings on both horizontal and vertical installations). See pages 16 and 17 for metal lath.

Recommendations of Associated Metal Lath Manufacturers, Inc., follow:

1–4. Minimum Weight of Metal Lath—

(a) *Expanded Metal Lath for Interior Work—*

For vertical position, partitions, etc., attached to metal supports 12 and 13½ in. on center, lath shall weigh a minimum of 2.5 and 3.0 lb., respectively, except for solid partitions where 2.2 lath may be used on 12-in. spacing; and 3.4 lath on 16-in. spacing. For nailed-on partitions, maximum spacing shall be 16 in. for all flat laths, minimum weight to be .....2.5 lbs.

For tied-on ceilings attached to metal supports, maximum spacing shall be 12 and 13½ in. for 3.00 and 3.4 lb. flat lath; for nailed-on ceilings, maximum spacing shall be 16-in. for these laths.

(b) *Flat Rib Lath—*

For Nailed or Tied-on Partitions and Furring:
For supports spaced not to exceed 16 in. on centers.....2.75 lb.
For supports spaced not to exceed 19 in. on centers.....3.0 lb.

For Nailed or Tied-on Ceilings:
For supports spaced not to exceed 12 in. on centers.....*2.75 lb.
For supports spaced not to exceed 16 in. on centers.....3.0 lb.
For supports spaced not to exceed 19 in. on centers.....3.4 lb.

*For nailed-on ceilings, this lath may be used 16 in. on centers.

(c) *⅜-in. Rib Lath—*

For Nailed or Tied-on Partitions and Furring:
For supports spaced not to exceed 19 in. on centers.....2.5 lb.
For supports spaced not to exceed 24 in. on centers.....3.0 lb.
For supports spaced not to exceed 31½ in. on centers.....4.0 lb.

For Nailed or Tied-on Ceilings:
For supports spaced not to exceed 19 in. on centers.....2.75 lb.
For supports spaced not to exceed 24 in. on centers.....3.0 lb.
For supports spaced not to exceed 31½ in. on centers.....3.4 lb.

1–5. Cornerite—Shall be Gold Bond Cornerite.

1–6. Corner Beads—Shall be Gold Bond Corner Bead (specify type).

1–7. Base Screed—Shall be Gold Bond Base Screed (specify type).

1–8. Picture Mould—Shall be Gold Bond Metal Picture Mould (specify type).

1–9. Metal Plaster Arches—Shall be Gold Bond, Metal Plaster Arches (specify type).

2. Application of Wood Lath

2–1. General—Lath with wood lath all (exterior stud walls) (wood furred walls) (stud partition) (ceiling beams or joists) (stair soffits), etc., which are specified to be plastered.

Note: It is recommended that ceiling over furnace and fuel room be lathed with gypsum lath or metal lath for fire protection or at least for a distance of 5 ft. beyond all sides of the furnace. Also stud walls enclosing furnace room.

2–2. All lath shall be spaced not less than ¼ in. nor more than ⅜ in. apart, a space of ¼ in. being left between abutting ends and shall be secured at each bearing with 3d lathing nails, using two (2) at each end and one (1) at each other bearing.

2–3. Lath shall be applied at right angles to the supports and joints shall be broken and not more than every seventh lath. No laths shall be carried from room to room. No lathing shall form long vertical joints or be set vertically to fill out at angles or corners.

2–4. Reinforce all re-entrant angles with Gold Bond expanded metal Cornerite and metal corner beads on all exterior angles. All strips shall extend at least 4 in. on each wall and shall butt at ends and not lap and shall be securely nailed or stapled at edges but not in corners.

2–5. Corner Beads—All external corners, both vertical and horizontal, shall be protected with corner beads, of the types or type specified for their full height or length; same to run from top of base to ceiling, heads or beams or to the spring line of arches.

2–6. Where wood lathing on walls, partitions or ceilings abut masonry work, strips of painted metal lath, extending at least 4 in. on each side of the intersection shall be securely fastened. Lath shall weigh not less than 2.5 lbs. per sq. yd.

2–7. Where heat pipes are concealed in walls or partitions, they shall be lathed over with strips of Gold Bond Gypsum Lath or Gold Bond Painted Expanded Metal Lath nailed securely to nearest supports.

2–8. Openings or where studs are spaced over 16 in. wide, as back of medicine cabinets, etc., shall be lathed with expanded metal ribbed lath.

Note: Add here any other special condition requiring metal lath, such as back of tile wainscot, etc.

2–9. Grounds for use with wood lathing shall be ¾ in. thick, including thickness of lath and shall be installed as specified under Carpentry.

3. Application of Gold Bond Gypsum Lath

General—

3–1. Lath with Gold Bond Gypsum Lath all (exterior stud walls) (wood furred walls) (stud partitions) (ceiling beams or joists) (stair soffits), etc., which are specified to be plastered.

3–2. Nailing edges of lath shall have at least ⅝ in. bearing on all studs, joists, etc., the length of the lath laid at right angles to studs. Horizontal joints shall abut, breaking joints in each course. Vertical joints of wall shall be staggered with ceiling joints so they do not meet. Vertical joints on opposite side of partition shall be staggered and not occur on opposite sides of the same stud.

3–3. Nails shall be 3d 1⅛-in., 13 gauge, ⅜-in. head blued lathing nails, set not more than 6 in. apart into center bearings and 3 in. apart on edges of board and driven home. Center bearings shall be nailed first, then outer edges.

3–4. Fit lath tight together at all re-entrant angles and corners. Fit lath accurately around all electric boxes and similar openings. Cutting shall be done with sharp hatchet or knife and then breaking over a straight edge.

3–5. Where any gypsum lathed wall, partition or ceiling abuts masonry, strips of Gold Bond Reinforcing Mesh or Gold Bond Expanded Metal Lath weighing 2.5 lbs. shall extend at least 6 in. on masonry and 6 in. on gypsum lath, fastening edge to masonry and to gypsum lath.

3–6. All re-entrant angles shall be reinforced over the gypsum lath with Gold Bond Cornerite extending 3 in. each side. Ends shall abut and not overlap.

3–7. All grounds for gypsum lath shall be ⅞ in. thick (including thickness of lath furnished, installed and specified under Carpentry).

4. Application of Gold Bond Insulating Lath

For complete Description and Specifications, see National Gypsum Company's Insulation Catalogue.

5. Application of Gold Bond Metal Lath

5–1. General—Lath with expanded metal lath all studs and beams for (interior stud walls) (wood furred walls) (stud partitions) (ceiling beams) (furred or suspended ceilings) (stair soffits).

5–2. Application to Wood Supports—Metal lath shall be nailed to wood supports and nails shall be not less than 4d or 6d nails or 1¼ in. in No. 14 gauge wire staples driven to a penetration of not less than ⅞ in. and 1 in., respectively, and fastened every six (6) in. along each support. Side joints shall be wired once between supports.

5–3. All rib lath shall be fastened at all ribs to each support and shall be wired at edges once between supports.

5–4. All metal lath shall be fastened to masonry with special hardened steel nails, self-clinching nails or other device best suited to type of construction.

5–5. Attachment to Metal Supports—Metal lath shall be wired to metal supports at intervals not exceeding 6 in. with not less than No. 18 gauge galvanized soft annealed wire and shall always be tied where sheets lap at channels and at edges once between channels.

5–6. Metal Lath shall be erected with the long dimension of lath across the supports; rib lath with the ribs against the supports.

5–7. Lath shall be first applied to ceilings and the sheets carried down 6 in. on side walls and partitions. If metal lath is not used on the ceilings, the lath shall start at the top of the wall and be bent and carried 6 in. on to the ceiling joists so that no joints shall occur at intersection of ceiling and walls.

5–8. On walls, lath shall be started on one stud away from the corner, be bent into corner and carried onto the abutting wall so as to avoid a joint at juncture of walls. Where ⅜-in. ribbed lath is used on ceilings or walls, it shall be butted into all joints, and strips of lath not less than 8 in. wide shall be bent into the shape of an "L" (Cornerite) 4 in. on each side and shall be securely wired along each edge of the sheet but not in corner.

5–9. Where any wall, partition or ceiling abuts masonry, the metal lath shall extend onto masonry at least 6 in. and be well fastened at edges to joints of the masonry.

5–10. Lath shall be placed so that the lower sheet laps over the upper (not vice versa) and shall be securely attached to supports. Nails or staples shall be so placed that they occur where sides of sheets lap at supports.

5–11. Expanded metal shall be lapped at sides not less than ½ in. and at ends not less than 1 in. End laps shall occur only over supports.

5–12. Ribbed lath shall be lapped at sides by nesting outside ribs, and at ends, 1 in.

All grounds for metal lath shall be ¾ in. thick including the lath and will be furnished and installed as specified under Carpentry.

Note: The metal lath specifications have been adapted from those of the Associated Metal Lath Manufacturers, Inc.

Note: No attempt has been made to include specifications for woven wire lath and many other forms of lath. For these, see Manufacturers' Specifications.

6. Metal Arches, Base Screeds, Corner Beads, etc.

6–1. Metal Plaster Arches—Gold Bond Metal Plastering Arches of the No. and shape as noted hereinafter or on the drawings, shall be securely set in position over the lath in accordance with the details. Corner beads at jambs shall join arch beads accurately without break.

6–2. Corner Beads—All external corners, both vertical and horizontal, shall be protected with corner beads, of the types or type specified for their full height or length; same to run from top of base to ceiling, heads or beams or to the spring line of arches.

Note: If beveled, chamfered or rounded corners are desired, make note where these will occur and change paragraph above.

6–3. Metal Picture Moulds—Gold Bond Metal Picture Moulds shall be installed in the following locations. *(List here, or in schedule of finishes, or on drawings, spaces to have picture mould.)*

Picture moulds shall be accurately set, true and parallel with ceiling line and substantially secured.

6–4. Metal Base Screeds or Wainscot Cap—Gold Bond Base Screed shall be installed in the following locations, *(List here, or in schedule of finishes, or on drawings, spaces to have base screed for base, wainscot cap, etc.)*

Note: Where special items such as metal bases, with or without electric wire ways; chair rails; door and window trim; etc., are desired, they should be included in the proper trade specification according to local jurisdiction.

SECTION 4

PLASTERING MATERIALS — BASE AND FINISH COATS

1. Materials and Mixing

1–1. General—All materials used in plastering shall be stored in a dry place above the ground and shall be handled in such a way as to prevent deterioration or intrusion of foreign matter into the plaster.

1–2. Lime, Gypsum and Cement shall be delivered and stored in original packages of the manufacturer. Any materials in containers showing water marks or which have been damaged or materials that have deteriorated shall be immediately removed from the premises.

1–3. Mixing boxes for base coats shall be clean and tight, approximately 3½ x 7 ft. and 12 in. deep, and 2½ x 4½ x 10 in. deep for finish coats and raised 4 in. at one end. Clean mixing boxes after each gauging.

1–4. Machine mixing shall be permitted in machines made for this purpose if they are cleaned after mixing and kept free of plaster from previous gaugings.

1–5. Tools shall be kept clean and shall not be rinsed in gauging water.

1–6. No more material shall be mixed than can be applied in one (1) hour. Do not mix one gauging with another. Plaster shall not be retempered after it has commenced to set.

Note: Clean water and proper mixing following the direction of the Manufacturer are of extreme importance to good work.

1–7. Plaster shall be kept from freezing for 24 hours after application and no finish coat shall be applied to base which is frozen.

1–8. In hot, dry weather, all openings shall be enclosed with muslin screens or windows kept closed to prevent plaster from drying before it has set; after that, windows shall be opened to permit wall to dry quickly.

1–9. All materials for plastering, except sand, shall be as manufactured by National Gypsum Company, Buffalo, N. Y.

2. Water

Water shall be clean and fit to drink, free from oil, acids, alkali or vegetable matter.

3. Sand

3–1. Sand for base coats shall be sharp, clean and free from saline, alkaline, organic or other impurities. It shall be graded from fine to coarse in conformance with the Standard Specifications for Plastering Sand of the American Society for Testing Materials. Pass through six-mesh screen.

3–2. Sand for finish coats shall all pass a No. 12 screen and shall be white, hard, durable grains free from soluble salts or injurious amounts of organic matter.

4. Plaster

4–1. Base Coat Plaster—Shall be Gold Bond Gypsum Plasters.

4–2. Finish Plaster—Shall be Gold Bond Hydrated Lime Putty with Gold Bond Gauging Plaster or Gold Bond Gypsum Prepared Plaster (specify which).

4–3. Keene's Cement—Shall be Best Bros. Keene's Cement.

SECTION 5

BASE COAT PLASTER—(SCRATCH AND BROWN)

1. Cement Plaster

1–1. On Wood Lath—*Scratch Coat*—Shall consist of one (1) part of fibered plaster to two (2) parts by weight of dry sand.

1–1–1. Soak lath thoroughly 12 to 24 hours before, and again an hour or two before, plastering is started.

1–1–2. Apply in two coats, scratch coat to be applied with sufficient pressure to obtain a good key, filling all spaces between the lath and leaving a light coat over lath. Scratch surface thoroughly to secure bond for brown coat.

1–1–3. Brown Coat—Shall consist of one (1) part plaster (fibered or unfibered; specify which) to not more than three (3) parts by weight of dry sand. Second coat shall be applied as soon as scratch coat is set hard and at least ¾ dry, to a true and even surface. Surface of the second brown coat shall be darbied and broomed to afford a bond for the finish coat.

1–2. On Gypsum Lath or Insulation Lath—Scratch coat shall consist of one (1) part fibered or unfibered plaster to not more than two (2) parts by weight of dry sand.

1–2–1. The Gypsum lath shall not be wetted before applying plaster.

1–2–2. Scratch Coat—Apply with sufficient pressure to work plaster well into the joints. Scratch surface to provide bond for the brown coat.

1–2–3. Brown Coat—Same as above for wood lath.

1–3. On Wire or Metal Lath—

1–3–1. Scratch Coat—Shall consist of one (1) part of fibered plaster to not more than two (2) parts, by weight, of dry sand.

1–3–2. First coat shall be applied with sufficient pressure to obtain good key, lightly covering lath. Scratch surface to secure bond for brown coat.

1–3–3. Brown Coat—Same as for wood lath.

1–4. On Brick, Clay Tile or Gypsum Tile—

1–4–1. Soak brick and clay tile and sprinkle gypsum tile before commencing plastering to reduce suction.

1–4–2. Scratch Coat—Shall consist of one (1) part of fibered (or unfibered) plaster to not more than three (3) parts, by weight, of dry sand.

1–4–3. Apply plaster to thickness of grounds (⅝ in.) in two (2) coats. Apply first coat in thin layer to obtain bond and double back immediately with second coat, straighten to true surface with darby and broom surface for finish coat.

2. Gypsum Sanded Plaster

2–1. Gypsum Sanded Plaster shall be applied same as above for Cement Plaster without the use of sand but with the addition of water.

2–2. Special Sanded Plaster—Shall be used for clay and gypsum tile and brick.

3. Gypsum Wood Fiber Plaster

Note: Wood Fibered Plaster is used invariably for one (1) and two (2) coat work, never three (3) coat work.

3–1. On Wood Lath—

3–1–1. Soak lath thoroughly 12 to 24 hours before, and again an hour or two before, plastering is started.

3–1–2. Scratch Coat—(Mixed with water.) Apply with sufficient pressure to obtain a good key, filling all spaces between the lath and leaving a light coat over lath. Scratch surface to secure bond for brown coat.

3–1–3. Brown Coat—(Mix equal parts of plaster and sand.) Apply to thickness to fill out to grounds and broom surface.

3–2. Gypsum Lath—

3–2–1. Gypsum Lath shall not be wetted before applying plaster.

3–2–2. Scratch Coat—(Mixed with water, no sand.) Apply with sufficient pressure to work plaster well into joints. Scratch surface to provide bond for brown coat.

3–2–3. Brown Coat—(Same as for Wood Lath above.)

3–3. On Wire or Metal Lath—

3–3–1. Scratch Coat—(Mixed with water.) Apply with sufficient pressure to obtain good key, lightly covering lath; scratch surface to secure bond for brown coat.

3–3–2. Brown Coat—(Mixed with equal parts of plaster and sand.) Apply to thickness to fill out grounds and broom surface.

3–4. On Brick, Clay Tile or Gypsum Tile—

Note: Do not specify wood fibered plaster for these bases.

4. Concrete Bonding Plaster (for Use on Concrete Surface)

(See notes regarding preparation of surfaces.)

4–1. Scratch Coat—(Mixed only with water.) Apply in one (1) or two (2) coats with as great pressure as possible, to thickness of not more than ⅜ in. and score heavily for bond of finish coat which shall be applied as thin as possible.

4–2. Gold Bond Wood Fiber Gypsum Plaster—May also be used (unsanded) for concrete surfaces in place of Concrete Bonding Plaster.

SECTION 6

FINISH COAT PLASTER

1. Smooth White Finish

(Lime Putty and Gauging Plaster.)

1–1. Hydrated Lime—Allow to soak twenty-four (24) hours.

1–2. Finish Coat—Shall consist of three (3) parts of lime putty to one part of dry gauging plaster by volume equivalent to two (2) parts of dry, hydrated lime to one (1) part gauging plaster by weight, and shall be thoroughly and uniformly mixed.

1–3. It shall be applied after the base coat is hard, set and about dry. Sprinkle surface of base coat with water before applying finish coat when necessary to kill suction.

Note: Do not apply finish on a base coat containing frost.

1–4. Apply in two (2) coats, first light scratch coat and the second time filling in all imperfections and straighten by means of straight edges.

1–5. Trowel surface to desired finish, keeping wet with brush. Bring same to complete troweling before plaster has set. Surfaces shall be perfectly true and even without scratches, ridges, waves, chips, voids, cracks, etc. All angles must be true, sharp, straight and clean.

2. Prepared Gypsum Finish (Using Gold Bond Trowel Finish Plaster)

2–1. Finish Coat—Plaster is ready after thoroughly mixing with water, allowing to soak for ten (10) minutes without hoeing. Make mix very thin and creamy.

2–2. Base coats must be set and hard and about ¾ dry. If too dry, cut suction by sprinkling with clean water.

2–3. Apply finish in three coats; first coat applied as thin as possible to handle and scratch thoroughly into base coat. Let draw for a few minutes, then apply second coat, leveling up. Apply third coat as thin as can be handled, filling in cat faces and imperfections. Let draw and then trowel to smooth surface, applying water sparingly with brush, but not enough to kill face of plaster. Avoid joinings by working top and bottom of wall at same time. Finish coat shall not be less than $\frac{1}{16}$ in. or more than ⅛ in. thick.

3. Sand Float Finish (Using Gold Bond Sand Float Finish)

3–1. Using Prepared Sand Float Finish—add water only.

3–2. Base coats must be set and hard, about ¾ dry, before applying finish coat.

3–3. Finish shall be applied with trowel, scratch in thin coat, then double back with second coat to bring to even, level surface free from surface marks. Use float (carpet) (felt) or (cork) to bring to final, even, granular finish. Apply water sparingly with brush, being sure to complete floating before plaster has set. Avoid joinings by working top and bottom of wall at same time. Finish coat shall not be less than $\frac{1}{16}$ or more than ⅛ in. thick.

4. Keene's Cement Lime Trowel Finish

4–1. Finish Coat—Shall consist of three (3) parts of Keene's Cement to one (1) part of lime putty by volume (or 100 lbs. dry Keene's Cement to 40 lbs. lime putty).

4–2. Base coats must be set and hard but not thoroughly dry before applying finish coat. If base coat is dry, spray slightly with water but do not soak.

4–3. Apply thin coat well scratched in, then double back and fill out to even surface. Allow to draw for a few minutes, then trowel and brush to a smooth finish, using as little water as possible while troweling. Thickness shall not be less than $\frac{1}{16}$ in. or more than ⅛ in.

4–4. Imitation Tile—Marked off for imitation tile, the thickness shall depend on depth of scoring but in no case should be less than $\frac{1}{16}$ in. at bottom of scoring.

4–5. Polished Surface—After cement is dry, polish with a cloth to a high polish.

5. Textured Finish (Gold Bond Color Texture)

(For complete information and specifications regarding Gold Bond Color Texture, see our separate catalogue.)

Note: Over Lime Finish—It is not good practice to apply Color Texture or any other decorative material over fresh lime putty finish, sooner than four months after application of the lime putty. If, however, it is desirable that the walls be decorated at once, Gold Bond Color Texture can be applied as soon as the lime putty is thoroughly set and dry. **The lime must not be sized.**

Color Texture may be applied over old lime putty walls with or without sizing. In applying over new or old lime putty, follow Method No. 1 described under "Methods of Application" on second page of our Color Texture catalogue (see File Index).

Over Gypsum Base Coats—Where used over two-coat gypsum plaster, walls should be floated before application of Color Texture to increase yardage and give more uniform job. Dry walls may be sized or dampened to increase yardage and give longer time for texturing.

SECTION 7
ORNAMENTAL PLASTER WORK

1. Cornices and Mouldings

1–1. Cornices and Mouldings of size or girth required should be specified, shown on drawings or noted in schedule of finishes.

2. Ornamental or Enriched Work

2–1. Ornamental or enriched work should also be shown on details, character desired described in specifications and noted on schedule of finishes.

3. Models

3–1. All ornamental work shall be executed from models approved by the Architect.

3–2. Models shall be furnished under a cash allowance of ( )which shall be included by this Contractor in his contract. Models shall be executed by a modeler (selected by) (satisfactory to) the Architect, and the work shall be executed under the direction of the Architect. Models shall be delivered by the modeler at his studio, ready packed, to this Contractor who shall pay all charges of transportation.

3–3. Models shall be furnished to this Contractor without cost to him by the Owner. Models shall have been prepared under the direction of the Owner.

4. Materials

4–1. Materials shall be Gold Bond Moulding Plaster for run mouldings and ornamental work.

4–1–1. *Mixing*—Add water only to Gold Bond Moulding Plaster.

5. Run Work

5–1. Run Work shall be run full, true and even in accordance with Architect's details. All curved work shall be run true to radius.

5–1–1. *Templates*—Shall be of metal, clean cut and accurate with the Architect's full-size details.

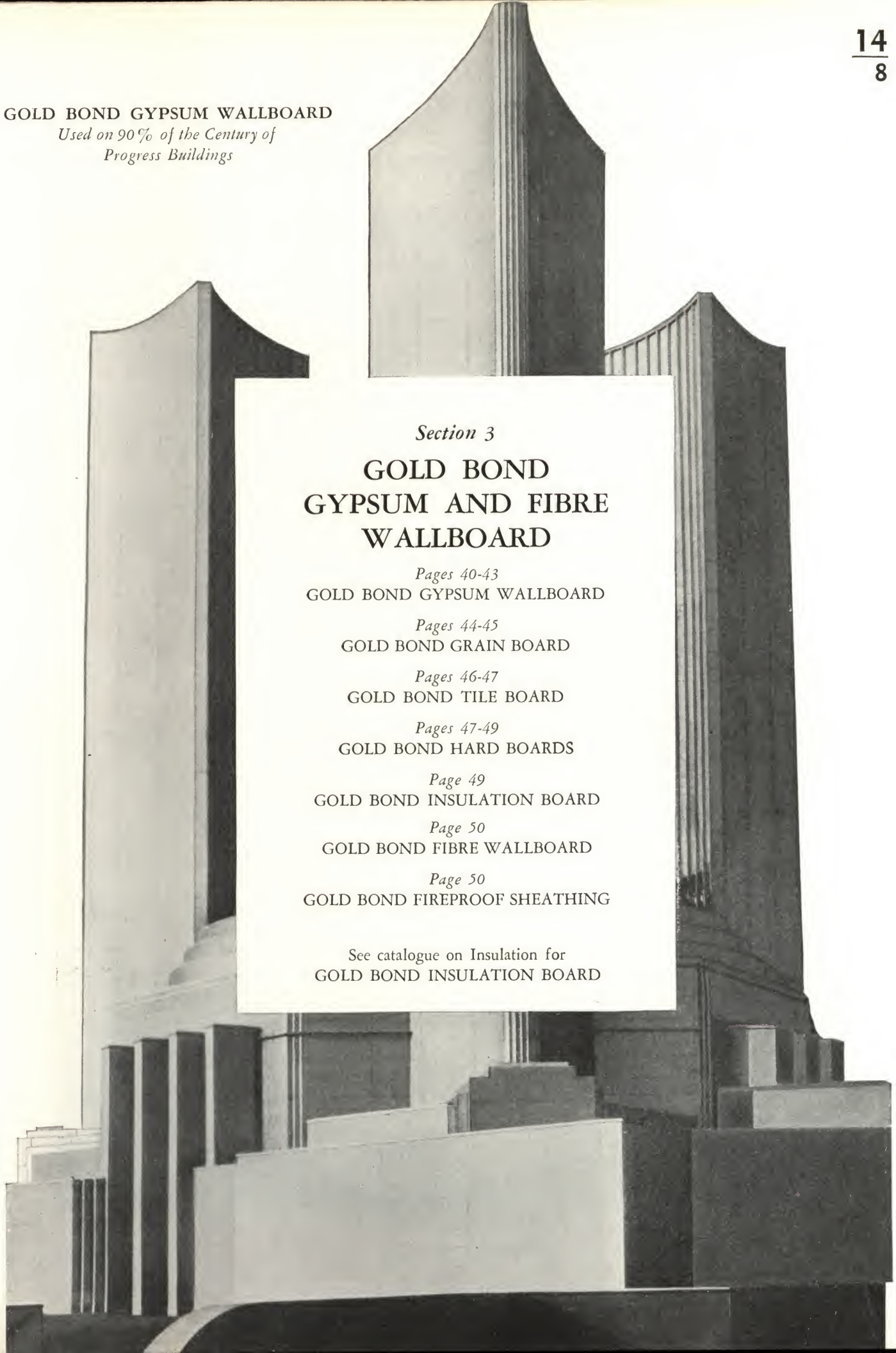
6. Cast Work

6–1. All enriched work and ornamental work which cannot be run in place on the job, shall be of best quality, cast from gelatine moulds. All work shall be properly backed, cast solid or hollow, and properly reinforced with wood or iron, and shall be securely stuck and held in place with copper wire.

6–1–1. Cast ornamental coffered ceilings shall be cast in sections and reinforced so that sections can be secured to hangers or other support from ceiling slabs, etc.

6–1–2. All cast work shall be set true in surface and alignment and any rough spots shall be finished and sand papered and left perfect, ready for decoration.

GOLD BOND GYPSUM WALLBOARD
Used on 90% of the Century of Progress Buildings



Section 3

GOLD BOND GYPSUM AND FIBRE WALLBOARD

Pages 40-43
GOLD BOND GYPSUM WALLBOARD

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GOLD BOND GRAIN BOARD

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GOLD BOND TILE BOARD

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GOLD BOND INSULATION BOARD

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GOLD BOND FIBRE WALLBOARD

Page 50
GOLD BOND FIREPROOF SHEATHING

See catalogue on Insulation for
GOLD BOND INSULATION BOARD

GOLD BOND GYPSUM WALLBOARD

The pioneer lightweight gypsum wallboard manufactured under exclusive patents. Fire-proof, non-warping; won't expand or contract; high insulation value. An ideal wall and ceiling material for new and modernizing work

GYPSUM wallboard in its present highly efficient form is relatively a new-comer to the building products field. Prior to 1925, when National Gypsum Company was organized, gypsum boards weighed about 2000 pounds per thousand square feet. They were brittle, breaking easily, and chipping along the nailing edge. Because of their excessive weight and fragility, their use was limited.

Gold Bond Changes Industry

Then in 1925, came Gold Bond with patents covering a revolutionary type of gypsum wallboard. The new product weighed 1700 pounds against the old 2000 pound weight . . . it was much stronger . . . its millions of tiny air cells gave insulation never before dreamed of in gypsum wallboard. Overnight gypsum wallboard became a practical building material, with a hundred-and-one uses in remodeling homes, stores, factories, offices, garages, and all types of building.

New Patents for Lighter Board

Years of pioneering followed, during which time Gold Bond continued to improve the quality of its board. Gold Bond Gypsum Tile Board was introduced, followed by Gold Bond Grain Board, which in texture and grain gives the effect of wood paneling at a great saving in cost. Both of these products are patented.

Meanwhile Gold Bond engineers were unceasingly at work in an endeavor to further lighten and strengthen gypsum wallboard. They succeeded. And in April, 1934, United States patent numbers 1,932,956 and 1,946,077 were issued covering the manufacture of a gypsum wallboard of extremely light weight plus super-strength.

This new, improved Gold Bond Board is the product we are manufacturing at present and it is the lightest and strongest board we have ever made. The number of tiny, dead air cells in the core has been increased, adding to the insulation value. At the same time, this unique (and patented) cellular structure makes possible nailing close to the edge of the panel without chipping. (It is estimated that the increased ease of handling, and lesser weight, makes a material saving on the actual job.)

Specifications

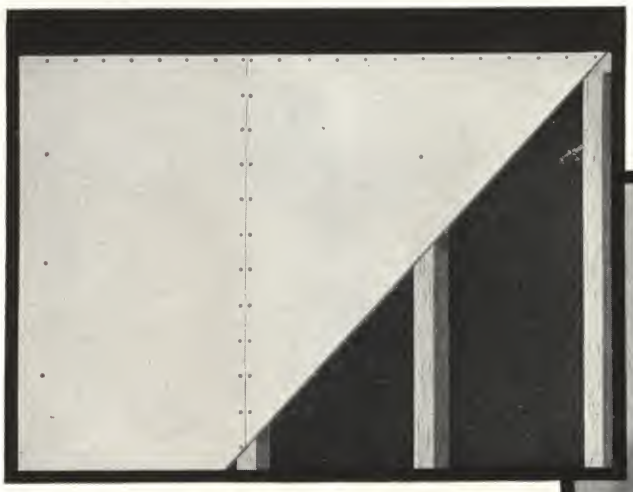
The National Gypsum Company guarantees its gypsum wallboard products to exceed by 100% the strength requirements of Federal Specifications SS-W-51 A and ASTM specifications C-36 for gypsum wallboard, and to meet all other requirements of these specifications.

A panel of ⅜ in. Gold Bond Gypsum Wallboard showing the distinctive edge label

N A T I O N A L G Y P S U M C O M P A N Y

Application

The boards must be nailed at all edges to studs and joists or furring strips. Headers must be provided for nailing the ends of boards. They are first nailed to the center supports and then the outer edges.



Nails at all Edges are spaced 3 inches apart and ⅜ inch in from Edge of Panel.

Nails are spaced 9 inches apart on Intermediate Wall Studs and 6 inches apart on Intermediate Ceiling Joists.

Fire Resistant

Because it is made of solid gypsum rock, Gold Bond Gypsum Wallboard is highly fire resistant. In repeated blow-torch tests, the material has shown its ability to resist fire. It is both non-inflammable and uncombustible and retards the transmission of heat. Tests have shown Gold Bond Fire Resistance to be unexcelled by any other gypsum wallboard.

Decorative Surface

The tough, smooth manila covering offers an ideal surface for painting, papering, or texture finish after the joints have been properly prepared. It has a highly calendered surface of ivory color, highly sized for the finest decorative effects.

Three Joint Treatments

Gold Bond Gypsum Wallboard may be panelled or the joints filled and treated for painting, papering, or texture finish, eliminating entirely the panelled wallboard effect. Gold Bond offers three methods for finishing the joints.

Treatment No. 1
Gold Bond Joint Filler

For an inexpensive and quick job, Gold Bond Joint Filler may be used for filling the intersections. Supplied in handy 5-lb. packages. The filler is mixed with water to a putty consistency, following the directions on the package. A putty knife is used to fill joints, nail heads, etc. Then it is smoothed off, let dry and sandpapered.

If the wall is to be painted or textured, size all filled joints and nail heads.

Treatment No. 1—Buttering the Intersections with Gold Bond Joint Filler.

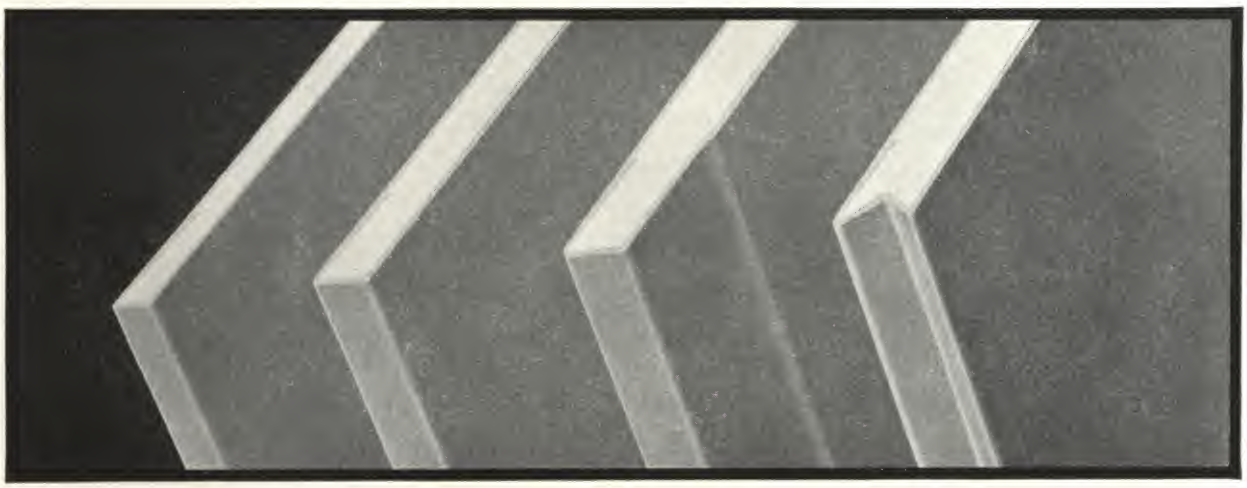
Treatment No. 2
Gold Bond Tape Joint System

This is an improved system for finishing intersections and consists of using a woven and processed cloth fabric 2″ wide, packed 250′ per box with 10 lbs. of special cement.

First fill and "butter" the joint with the cement, press the tape into place, and then smooth it off by forcing cement through the tape with putty knife. Then sandpaper and treat as indicated in the Treatment No. 1.

Treatment No. 3
Gold Bond Ideal Reinforced Joint System

Recommended for the highest type of job. This system not only hides the intersections effectively, but in addition reinforces the joints as well. For details see next page.



¼-inch ⅜-inch ½-inch with Recessed Edge ½-inch with T. & G. Edge

Gold Bond Gypsum Wallboard is Supplied in Three Standard Thicknesses

GOLD BOND IDEAL REINFORCED JOINT SYSTEM

A new and improved method of making the reinforced joint stronger than the board. Each carton contains . . . 250-ft. Roll of 2-in. Balloon Tape . . . 1 lb. Can of Dry Glue . . . Enough Cement to cover tape.

ALTHOUGH there is practically no expansion or contraction in the wallboard, there is always a certain amount of shrinkage and settling in wood framing, capable of causing cracks at the joints of the wallboard. The joints usually are filled with gypsum filler and sometimes reinforced with various materials and tapes.

As the result of many experiments, we now recommend a system of joint treatment which we have found, through actual tests, offers a satisfactory solution of finishing joints.

Extreme Strength of Joint

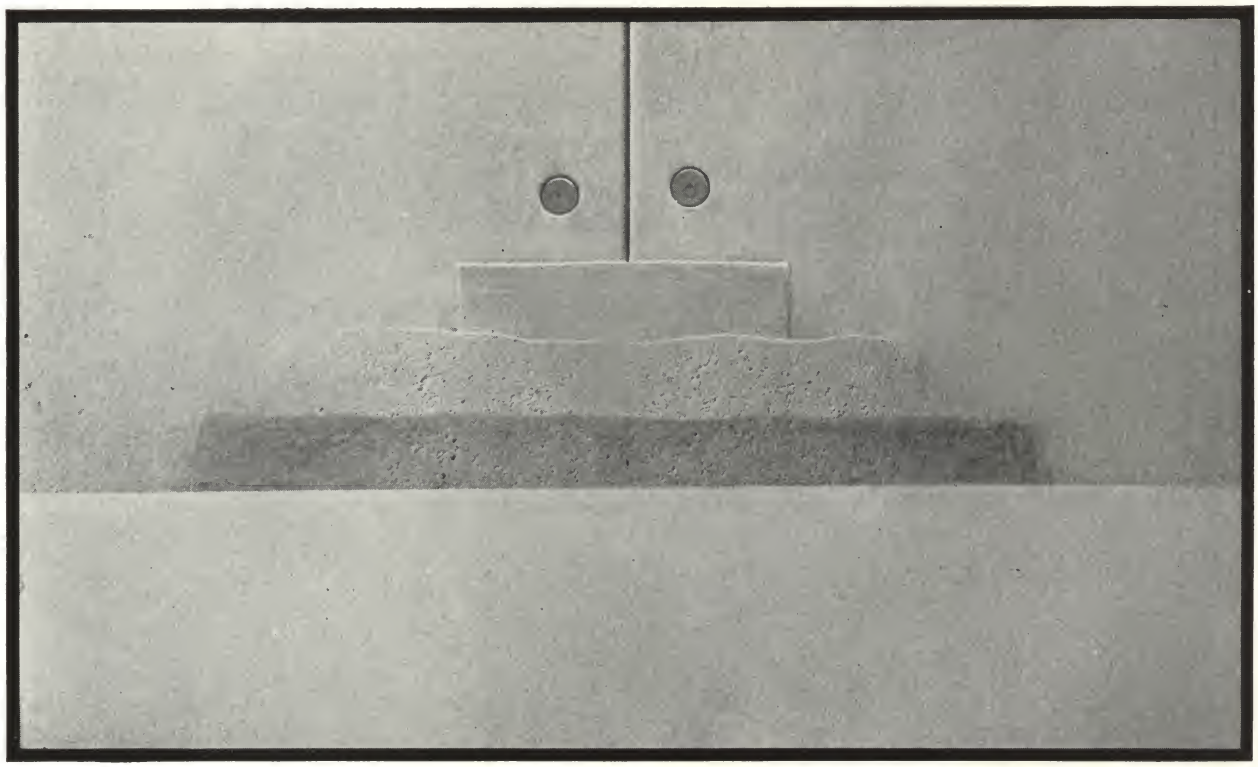
The joint is stronger than the board. This is accomplished by the use of Gold Bond Ideal Joint Reinforcing, a fabric which has a tensile strength of 60 lbs. per sq. in. and is identical with that used on lighter-than-air craft.

In this system, if the edges of the boards are butted close together, it is not necessary to fill the joints. Gold Bond Ideal Joint Reinforcing is then glued over the joint with a special casein glue, and covered with a special cement. The reinforcing although very strong is thin and when the joint is completely finished as directed it is practically imperceptible. Patent application is in process covering this system.

Easily Applied

The illustration below shows how the reinforcing is applied over joints and the steps of finishing the joint, and applying decoration.

On the following page are given complete specifications for the application of Gold Bond Gypsum Wallboard and the finishing of the Gold Bond Ideal Reinforced Joint System.



This Illustration Shows the Progressive Steps of Finishing the Joint Beginning with the Special Tape (Shown in Top Center of Photo), then Covered with a Special Cement, Sandpapered, Sized, and Decorated

STANDARD SPECIFICATIONS

FOR APPLICATION OF GOLD BOND GYPSUM WALLBOARD

1. Scope of Work

List all walls, ceilings and other surfaces which are to be covered with Gold Bond Gypsum Wallboard.

2. Framing

2–1. Framing of all studs and joists shall be 16 in. on center, unless for bearing partitions which are 12 in. on center, and shall follow general good practice.

2–2. Headers of 2 x 4 in. shall be provided in ceilings and wherever else required to provide proper nailing for all ends of Gold Bond Wallboard . . . also between studs for baseboards, wainscot, or other finish, and for furring to take wood beams, cornices, etc.

2–3. For old plaster ceilings, nail 1 x 2 in. furring strips over the plaster, to provide proper nailing for ends and intermediate support of boards, using 8d nails.

3. Material

3–1. Wallboard—Where wallboard is referred to hereinafter, it shall mean Gold Bond Gypsum Wallboard as manufactured by National Gypsum Company, Buffalo, N. Y.

3–2. Gold Bond Wallboard shall be (¼ in.) (⅜ in.) (½ in.) thick in lengths to run full height on walls from floor to ceiling and to size of panels or to headers on ceilings.

Note: (Where ½ in. Gold Bond Wallboard with V-Jointed Edge is used for walls, it shall be applied at right angles to direction of studs.)

3–3. Nails for ¼ in. and ⅜ in. Gold Bond Wallboard shall be 3d, blued nails 1⅛ in. long for use over studs, joists or beams. For ½-in. board use 4d nails 1⅜ in.

3–4. For directly over old plaster use 6d cement coated common nails 1⅞ in. long.

3–5. Where ceiling has floor above use 4d cement coated nails, 1⅜ in. long for ceiling wallboard.

4. Handling and Preparation

4–1. Receiving Material—Wallboard shall be piled flat in center of room with Gold Bond label up except first board which shall be turned down.

Note: (Wallboard shall not be delivered on the job until doors and windows are in place.)

4–2. Handling—Wallboard shall be handled with long edge up.

4–3. Sawing and Cutting—All required cutting of wallboard shall be done with a saw unless joints will be covered by trim. Sawing shall be done with sharp handsaw with back of board placed down and supported close to sawed edge. Other cuts may be made by scoring with sharp edge of hatchet or chisel and breaking over straight edge. Bevel the face side of cut edges and mill cut end with coarse sand paper so that no rough paper edges will remain, unless covered by trim. Recut the ends of all wallboards which have been damaged by handling.

5. Application

5–1. Inspection—Before applying wallboard see that all edges and ends are perfect and all ends and cut edges are face beveled and that faces of boards are undamaged.

5–2. Wallboard, with back toward studs, shall be applied directly to studs, beams, etc. Horizontal joints shall be made only over framed headers.

Note: (Board shall be butted together if Gold Bond Reinforced Joint System is to be used or separated ⅛ in. if joints on cut ends are filled.)

5–3. Nailing—Wallboards shall be nailed first to intermediate studs or beams and nails driven straight in, with heads set slightly below the surface without using nail set. Nails shall be spaced 9 in. apart on intermediate studs of walls and 6 in. apart on ceilings. Nails shall be spaced 3 in. apart and ⅜ in. back from all edges and ends. Boards shall first be tacked on edge to hold to adjoining edge and then shall be nailed first to each intermediate support working from center toward ends and finally sides and ends shall be nailed, with nails opposite each other on edges.

5–4. Ceilings—Ceiling boards shall be erected first and length of board shall be at right angle to ceiling beams. Panels shall be in one piece as far as possible but if joints occur they shall be broken unless covered with strips or wood beams.

5–5. Walls—Wallboard shall be applied in full lengths from floor to ceiling, standard board to be parallel to framing, ½ in. board at right angle to framing. Edges shall be squared with adjacent wall and ends shall fit snugly against ceiling boards, scribing where necessary. Cut in fillers over door and window openings last. Vertical joints on opposite sides of partitions shall not come opposite each other on the same stud.

FOR APPLICATION OF GOLD BOND IDEAL REINFORCED JOINT SYSTEM

1. **General Note**—Wallboard shall be erected according to standard specifications. Joints shall be butted together.
2. **Preparation of Glue**—Glue shall be Casco Casein Glue as received in original container. Mix glue with three parts of water by weight (1 lb. of glue to 1½ qts. of water) in clean metal container. Allow to stand for 15 to 20 minutes and stir before using.
3. **Preparation of Joint Reinforcing**—Cut Gold Bond Ideal Joint Reinforcing to proper length and immerse in glue. Remove excess glue by pulling tape between two flat pieces of board held together moderately tight. Entire area of reinforcing must be soaked in glue.
4. **Application of Joint Reinforcing**—Reinforcing shall then be applied over joint. Flatten reinforcing against wallboard, on each side of joint, with a cloth which will remove all excess glue and allow to dry.

   Note: If Joint between wallboard panels is over ⅛ in. wide due to improper application of board, it is advisable to fill joint level with regular Gold Bond Finisher (not joint cement) and allow to set and dry before application of joint reinforcing.
5. **Finishing the Joint for Rough Textured Finishes**—If a rough coat of Gold Bond Color Texture is to be applied as finish, size the wall, after glue has dried, with shellac size to which a little texture has been added. Then apply texture coat.

   Note: For rough coats of texture, which are to be color glazed, it is not necessary to size before application of finish.

   Note: To avoid brushing through on all textured applications, it is preferable to put on thin wash coat of texture mixed to creamy consistency, which is allowed to dry before final texture coat is applied.
6. **Finishing the Joint for Flat Painted, Papered or Fine-Textured Finishes**—After the glue has dried, the reinforcing shall be covered with a thin coat of Gold Bond joint cement.

   The cement shall be mixed with water in a clean metal container to a pasty consistency and allowed to stand for ½ hr. before using. The cement shall be applied with a wide (3 in.) knife.

   After cement has dried it shall be sandpapered smooth with emery cloth or coarse sandpaper followed by fine sandpaper. Wall should then be sized, and is ready for texture or painting.

GOLD BOND GRAIN BOARD

A new type of interior finish, giving the effect of expensive wood paneling at a fraction of the cost. Obtainable in large, easily-handled, fire-proof panels in Mahogany, Gumwood or Whitewood. Made under exclusive patents.

GOLD Bond Grain Board is a sturdy fire-proof gypsum wallboard with a wood grained surface made in panels 32 in. wide and in lengths of 8, 9 and 10 ft. Its cost is but a fraction of the cost of real wood paneling, and when properly applied defies detection upon casual inspection. Millions of feet of Gold Bond Grain Board, in mahogany, gumwood, and whitewood, have been used in offices, homes, stores, restaurants, special shops . . . in short, wherever an impressive but inexpensive wood paneling job is desired.

No Two Feet of Graining Alike

Not only does Grain Board strongly resemble actual wood, but, as in wood itself, the grain pattern is never repeated. (National Gypsum Company has a standing offer of $500 for the individual who discovers two exactly similar panels of Grain Board.) In this, Grain Board differs from other products which use a printed photographic grain, which naturally repeats itself over the wall area. The natural wood grain of Grain Board may be brought out by following the simple directions on the opposite page, with wax, shellac or varnish.

Non-Fading

Repeated tests prove that Grain Board is absolutely non-fading, even under severe exposure to the ultra-violet rays of the sun. Standard fade

An Executive Office Paneled in Mahogany Finish Grain Board
Equally suitable to stores, homes, libraries, shops, etc.

Three Home Views Created by Joseph Platt of Delineator Magazine, Showing Varied Treatments Obtainable with Gold Bond Grain Board

NATIONAL GYPSUM COMPANY

tests made on Gold Bond Grain Board with ultra-violet light show an exceptional rating in fade resistance. In actual use, no fading detected in over three years.

Will not Expand, Contract, Warp, or Burn

Unlike wood, which it so closely resembles in appearance, Grain Board is practically unaffected by temperature and weather changes. Its 32-in.-wide panels, when properly erected, will not warp, expand, contract or buckle. The core of the board is solid gypsum with myriad tiny dead air cells, hence it is highly insulating and at the same time offers the same fire-resisting qualities and other advantages of standard gypsum wallboard.

Structural Strength

Grain Board is possessed of the same extra strength as regular Gold Bond Gypsum Wallboard . . . the centers of each are identical, made under the same exclusive patents to assure lightness, easy nailing, and superior strength. Its tough grained surface resists kicks and scuffing, and will not mar readily, but when it is struck with sufficient force to cause a puncture the damage can be quickly repaired at much less than the cost of repairing a similar injury to wood paneling.

DIRECTIONS FOR FINISHING

The rich grain effect of Grain Board is best secured and enhanced by following these few simple directions:

For a Velvety Wax Finish

1. Be sure panel is free from dust. Clean off dust and dirt if present by wiping with a damp cloth.
2. Apply any good emulsified floor wax, such as Dri-Bright or Mystic Gloss, by pouring small quantity of liquid on clean cloth and rubbing with grain of panel. If not available, any high-grade, oil-free, hard wax emulsion is satisfactory. *Avoid use of waxes containing oil.*
3. This will dry to a velvety wax finish in about 10 minutes.
4. If desired, a second coat may be added in the same manner.
5. Polish with soft cloth if desired.

For a Varnish Finish

1. Be sure panel is free from dust by wiping with dampened cloth.
2. Apply one coat of filler which can be made by mixing one part of *white* shellac to one part of alcohol. This should be applied preferably before the panel is erected and in any case applied on each panel individually to avoid any lap marks.
3. Allow to dry.
4. Sandpaper surface lightly with 3/0 grade sandpaper, or steel wool.
5. Apply one or two coats of velvet or flat varnish, taking care that entire panel is done at one time. Avoid brush marks caused by overlapping. Brushing should, of course, follow the length and grain of the panel. *Avoid use of gloss varnishes.*

For a Shellac Finish

1. Be sure panel is dust-free by wiping with dampened cloth.

Here in This Close-up View the Distinctive Appearance of Wood Graining Is Seen Clearly

2. Apply one pound cut shellac with brush following grain of panel.
3. Allow to harden.
4. Add second coat if desired.

Caution: Lacquers should not be used on Grain Board. Nor should varnish be used without a preliminary (or sizing) coat of shellac.

GOLD BOND TILE BOARD

A gypsum tile board in large, easily-applied panels. Made under Gold Bond patents. Saves 90% over ceramic tile.

Producing an Inexpensive Tile Effect

IN ALTERATION, it is often desirable to have the effect of ceramic tile without the cost, trouble of supplying proper base and the trim necessary to complete the job of tile. For this purpose, Gold Bond Tile Board offers an inexpensive and satisfactory solution of the problem.

Gold Bond Tile Board

Gold Bond Tile Board is a gypsum board ⅜ in. thick, 48 in. wide and 6, 7, 8, 9 and 10 ft. long, made under exactly the same processes and of the same material as Gold Bond Gypsum Wallboard. It has the same incombustible core of gypsum and specially finished, tough, strong fiber surface. The four inch square tile are laid off by slight indentation of the surface of the board, to give the effect of tile joints.

Takes Any Decoration

Gold Bond Tile Board comes unfinished in the natural light cream color of the wallboard. It is painted, enameled or lacquered after erection, and by this means it is possible to obtain the exact color scheme desired for any decorative scheme. It also allows the color scheme to be changed whenever desired, which is a decided advantage these days with modern interior designs and decorative treatments constantly changing.

When properly prepared, the surface is easily cleaned by means of a damp cloth.

Gold Bond Tile Board Advantages

It is readily applied over old work, or for new work by a carpenter at little cost in comparison with faience tile.

1. It does not require a specially prepared base.
2. It is made with a core of incombustible gypsum.
3. It will not expand, contract, warp, buckle or crack.
4. It is applied quickly and with little dirt and muss.

Gold Bond Tile Board is Ideal for Kitchens—Easily Enameled in Attractive Colors—Washable, Sanitary, at Only a Fraction of Ceramic Tile Cost

Freedom from Joints

Since the Tile Board is erected in long sheets, from 6 to 10 ft. long, it is free from cracks except where the corners join. The cap and base generally used is wood, and a wood corner mould should be used at internal and external corners.

Section of Gold Bond Tile Board Showing Embossed Tile Effect. Actual Size of Tile is 4 Inches Square

NATIONAL GYPSUM COMPANY

SPECIFICATIONS FOR APPLYING AND FINISHING

For Four-Foot-High Wainscot

1. Gold Bond Tile Board, when delivered at the job, shall be carefully examined to see that the tile surface is in perfect condition, without scratches or blemishes.
2. It shall be applied with the long edges horizontal, and wherever possible the full length of the room. It shall be carefully fitted around window, door or other openings, and then nailed to the studs, using 3d, 1⅛-in. cement coated nails. Where necessary to nail in areas not covered by mould, drive nails in center of square, slightly countersink and cover with Gold Bond Joint Cement, sanding to a perfect surface.
3. Corners shall be covered with ¾ in. quarter round for internal and standard wood cover mould for exterior angles.
4. **Cap and Base:** Cap and base of wood shall be applied as soon as the tileboard is set.
5. **Finishing:** Tile Board shall be given a coat of shellac or size when installed. Enamel or lacquer shall be applied according to the manufacturer's direction.

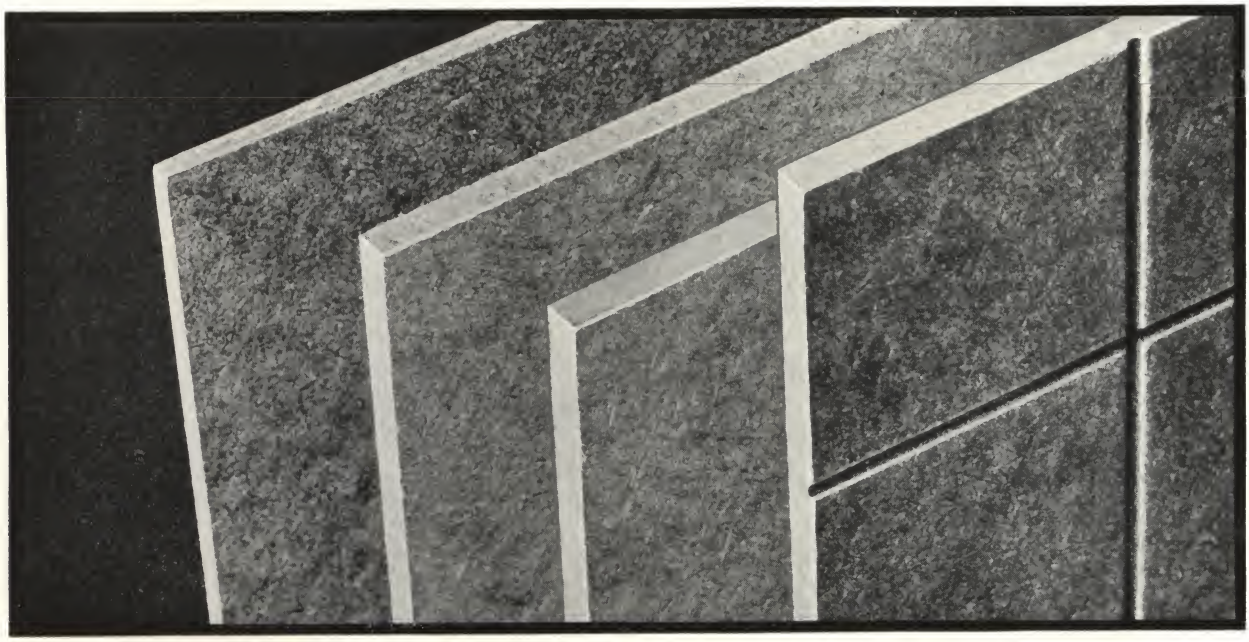
Contrasting Colored Indentations

Give surface a coat of flat paint or enamel undercoating of the finished color desired for the indentations. Then apply a coat of enamel in some contrasting color, brushed on very thin. When enamel has set, wipe out the joints with any narrow tool such as a ruler, match, or ordinary meat skewer. It is advisable to stretch a piece of cloth over the end of the tool to absorb the enamel that is wiped out of the indentations, taking care to keep the cloth clean. This brings out the color of the base coat or undercoating at the indentations and produces an attractive two-color job.

Showing How Easily Gold Bond Tile Is Applied

GOLD BOND HARD BOARDS

Grainless All-Wood Wallboards



⅛" Hardboard Tempered — **$\frac{3}{16}$" Hardboard Untempered** — **¼" De Luxe Panel Board** — **$\frac{3}{16}$" Hardboard Tile**

N A T I O N A L G Y P S U M C O M P A N Y

GOLD BOND HARD BOARD

General Description

It is an all-wood product board made of fibers obtained by exploding wood chips by high steam pressure. Wood possesses a natural, powerful cementing material known as lignin. The exploded fibers and lignin are thoroughly felted together, and when placed in heated hydraulic presses are cemented together by the perfect adhesive present in wood itself. No foreign binder or chemical is used.

Advantages

It will not crack, split or splinter. It is highly resistive to wear and moisture, and shows little contraction and expansion. It is readily sawed and worked with carpenter's tools, and does not damage them.

Uses as Interior Finish

One surface of Gold Bond Board is extremely dense and perfectly smooth. The opposite side has a uniform texture. Either is available for use.

Its natural tone is a rich brown and makes a very pleasing wall paneling, in itself. However, it lends itself to any type of decoration. See specifications for instructions.

Sizes and Weights

1/8 and 3/16 in. thicknesses are made in lengths of 6, 8, 9, 10 and 12 ft. and 4 ft. wide. They weigh as follows: 1/8 in., 760 lbs. . . . 3/16 in., 1040 lbs.

1/4 in. thickness, weighing 1370 lbs. per M, and 5/16 in. thickness, weighing 1710 lbs. per M sq. ft., come in one size only—4 ft. x 12 ft.

Types

Gold Bond Hard Board is available in both tempered and untempered types. Tempered Hard Board is the same as regular Hard Board, except it is specially treated with a waterproof, densifying material for special uses and weighs 20 to 50 lbs. more per M sq. ft.

GOLD BOND PANEL BOARD

This is similar to the Hard Board but is softer, and is only made in 1/4 in. thickness and in sizes 4 ft. wide x 6, 8, 9, 10 and 12 ft. long. It is lighter in color as well as in weight, than the Hard Board.

It costs about half as much as the 1/4 in. thick Hard Board.

Supplied in two grades: Standard Panel Board and De Luxe Panel Board. The De Luxe Panel Board has a denser, harder surface.

GOLD BOND HARD BOARD TILE

This is similar to the Gold Bond Tempered Hard Board in every respect except that one surface is divided off into 4 in. squares by means of slight indentations to represent joints of tile.

This is 1/8 in. and 3/16 in. thick and is applied in the same manner as the Hard Board except that it is generally applied with its length horizontal and in full lengths of the wall wherever possible. Made in one size only: 4 ft. x 12 ft.

After it is applied it is enameled or lacquered the color desired, and when carefully done it often is mistaken for ceramic tile but is applied at a fraction of the cost of tile.

SPECIFICATIONS

GOLD BOND HARD BOARD AND GOLD BOND PANEL BOARD

Used as Interior Finish

1. Materials

1–1. The interior of all walls and partitions and ceilings shall be covered with Gold Bond (Hard Board 1/8, 3/16, 1/4 or 5/16 in.) (Panel Board 1/4 in.) as supplied by National Gypsum Company, Buffalo, N. Y.

1–2. Hard Board (Panel Board) shall be in length to run full height to ceiling and to size of panels or to headers on the ceiling.

2. Framing

2–1. All studs, sills and plates shall be framed in usual wood frame construction. All studs shall be spaced accurate 16 in. on center. Use 2 x 4 in. headers cut between studs for nailings where horizontal joints in boards occur and for chair rails, base and similar trim.

2–2. Extra studs shall be used for nailing where necessary to carry out the paneling design desired.

3. Application

3–1. The Gold Bond (Board) shall be applied directly to the studs, beams, etc., allowing ample bearing for nailing on all edges. Boards shall be applied in single sheets from floor to ceiling on walls and partitions, and in full width panels on the ceiling wherever possible. Horizontal joints shall be brought to moderate contact at top, sides and bottom. Boards must not be forced into place.

4. Nailing

4–1. Boards shall be nailed first to intermediate studs with 1¾ in. finishing nails every 6 in. and driven at a 30° angle, then to top edges and lastly the sides. Heads of nails shall be countersunk with nail set. When joints are to be covered with battens, the edges of the boards may be nailed with 4d box nails. If edges are beveled and no battens used, then nail edges with 1¾ in. finishing nails spaced 4 in. apart and countersunk.

5. Battens—Trim

5–1. Joints shall be covered with Hard Board battens with outside edges beveled at 45° angle. For corners or ends, bevel one edge only. Do not bevel ends.

5–2. Baseboard, wainscot or other trim shall be of wood as commonly used.

5–3. Battens shall be securely nailed to all framing headers, etc., with 6d finishing nails set at 30° angle.

5–4. Painting and Decorating: Gold Bond Hard Boards may be left in their natural color and finish, but if desired may be painted, enameled or lacquered. Hard Board and Panel Board should be well sized before painting. Use of Hard Board will save one priming coat.

See Painting Specifications.

FOR STAINING, SIZING, PAINTING GOLD BOND HARD BOARD AND GOLD BOND PANEL BOARD

6. Staining

6–1. Any stain (state which) whether acid, oil, benzoil, alcohol or commercial oil or water stains used for dyeing wood, may be used over Gold Bond Boards.

7. Sizing Before Painting

7–1. The surface of all Gold Bond Hard Boards shall be well sized with standard commercial size before painting, enameling or lacquering.

8. Painting

8–1. After sizing coat shall be thoroughly dry, apply one or two coats of paint, enamel or lacquer.

FOR GOLD BOND HARD BOARD TILE

1. Materials

1–1. The walls of (give location) shall be lined to height of 4 ft. (make note if higher) with Gold Bond Hard Board Tile ⅛ in. thick as supplied by National Gypsum Company, Buffalo, N. Y.

2. Framing for New Work

(See Specifications Paragraphs 2–1 and 2–2 for Gold Bond Hard Board.)

3. Application (Cementing and Nailing Over Plaster)

Note: When walls are uneven or in bad condition, Gold Bond Hard Board or Panel Board may be nailed or cemented in place. The Hard Board Tile may then be applied. Adhesives used in applying Hard Board Tile should be either a high-grade waterproof linoleum cement, or a special mastic formulated for that purpose. Water emulsion mastics should not be used.

3–1. Remove base-board, plumbing fixtures, brackets, shelving, which will interfere with installation. Walls shall be trued up and all high places sanded down, or if necessary shall be covered with Gold Bond Panel Board.

3–2. Hard Board Tile shall be carefully fitted and butt joints trued up by plane, file or sandpaper. Corner joints shall be beveled, fitted against a corner bead, or into a special metal corner bead.

3–3. After fitting boards carefully, cement shall be applied over the entire back of board and then be placed into position against wall. Hold board in place with a few 1¼ in. brads until cement sets. All nailing shall be in scoring . . . remove or countersink nails and putty up holes. Continue applying boards in the same manner, carefully leveling and truing up.

3–4. Base, Chair Rail or Cap Moulding: (These may be of wood, or if metal in zinc or chromium specify which is desired.)

4. Application (Nailing)

4–1. Gold Bond Hard Board Tile shall be applied (over studs when blocked out to face of wall above) (over Gold Bond Hard Board) (over old plaster) to heights as previously noted in Paragraph 1.

4–2. Over Old Plaster: Baseboard, plumbing fixtures, brackets, shelves, etc., shall be removed, which will interfere with installation. Walls shall be trued up and all high places sanded down, or if necessary be covered first with Gold Bond Panel Board.

4–3. Nails shall be 1¼ in. 18 gauge beads, nailed into the crossing of score lines wherever possible, otherwise nail in horizontal into stud. Nails through the body of board should be spaced 12 in. apart wherever possible. Any necessary vertical joints must be made only at studding, and nailed through each horizontal score line ¼ in. in from the edge.

5. Decorating

Note: Hard Board Tile may be decorated by painting, enameling or lacquering. Ordinarily a coat of size and two coats of paint are required. For enamel finish a priming coat, undercoat, and final coat of enamel is general practice. For lacquer finish, a priming coat and either an undercoat or two coats of lacquer are recommended. The treatment depends on the recommendation of the manufacturers of the finish used, and manufacturer's directions should be followed.

GOLD BOND INSULATION BOARD

There are two types of Gold Bond Insulation Board:

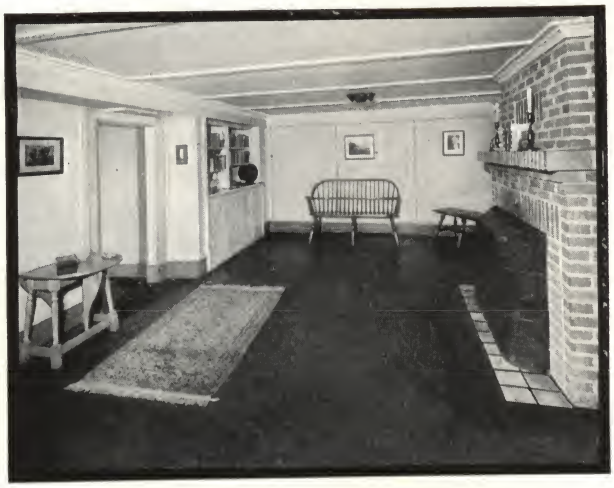
No. 1—Gold Bond Aluminum Foil Board which presents the newest and most effective principle—reflective insulation—in combination with rigid fireproof panels of Gold Bond Gypsum Wallboard.

No. 2—Gold Bond Fibre Insulation Board made full ½-in. thick of the tough fibres of the licorice root plant.

A complete description of both types of insulation board is given in the section on Insulation Products.

GOLD BOND FIBRE WALLBOARD

Gold Bond Fibre Board Used in Attic Room



Used to Finish Off Game Room in Basement

The low cost and easy application of this material makes it ideal for such uses.

A Light Fibre Board with Many Uses

Gold Bond Fibre Wallboard is a light, strong wallboard which serves many useful purposes such as insulation against heat, cold and sound . . . for partitions . . . interior finish of temporary building . . . and for many uses in offices, homes, factories, etc. It is one of the oldest wallboards manufactured, and is known nationally and abroad.

The Reinforcing Core

Although an inexpensive board, it has extra quality of strength and stiffness due to the special manufacturing process. It consists of three layers besides the finish paper on each side. The center core consists of a felted layer of licorice root and other fibres, which when processed are strong, tough and waterproof. This core is enclosed with two layers of wood pulp fibre and the two finished tough paper surfacings.

For Decorative Finish Surface

Both sides of the Fibre Board are finished alike, in a light cream color. This surface is sized to seal the surface and make it resistant to moisture. This may be tested by placing a drop of ink on the surface. The ink will not spread, but remain in the one position until it evaporates. Sizing of the surface also reduces the suction of paint when it is desired to paint the surface.

Ease of Handling and Sizes

The board has no grain and will not chip, crack or sag. It is sawed with a hand saw and is readily fitted to unusual shapes. It is light and easily handled.

It is made in one thickness 3/16 in. and in lengths of 6, 7, 8, 9, 10, 12, 14 and 16 ft. by 48 in. wide. The boards are packed ten to a bundle. It weighs approximately 550 lbs. per 1000 sq. ft.

GOLD BOND FIREPROOF SHEATHING

A V-Joint Lap Gypsum Sheathing

Gold Bond Fireproof Sheathing is a gypsum board made under the same manufacturing specification as Gold Bond Gypsum Wallboard. The principal differences are in the width, thickness and the type of edge on the long side. The Sheathing is ½ in. thick and the long sides are made for a V-Joint lap, 24 in. wide.

Uses for a Fireproof Sheathing

Gold Bond Fireproof Sheathing is made to be used in place of standard wood sheathing, where ideal sheathing is wanted. It is used under clapboard siding, stucco, brick veneer, and with furring strips under shingle construction.

General Advantages

One of the principal advantages is that it is incombustible as it is made with a gypsum core. It has greater strength than wood sheathing, as its greater width acts with greater bracing effectiveness.

On account of the tight horizontal joint and the ends being nailed to studs, it makes practically a one-piece wind-tight and moisture-proof wall, effectively eliminating any infiltration.

The gypsum being an inert material, the board does not expand or contract, warp or buckle or twist. It does not deteriorate with age.

It is sawed and nailed like wood sheathing, and applied with the length at right angles to the stud.

Sizes and Weights

The sheathing is ½ in. thick, 24 in. wide and 8 ft. long, to work out properly with studs on 16 in. centers.

THE Gold Bond HANDBOOK

ON RELATED PRODUCTS
FOR WALLS & CEILINGS

NATIONAL GYPSUM CO.—GENERAL OFFICES, BUFFALO, NEW YORK

THE RED BOOK

1936 EDITION

UNITED STATES GYPSUM COMPANY

UNITED STATES GYPSUM COMPANY

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Samson Plaster Board Company, Sales Agents for United States Gypsum Company, Crosby Building, Buffalo, N. Y.

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Skaneateles Falls, N. Y.
Southard, Okla.
South Bend, Ind.
Los Angeles, Calif.
Sweetwater, Tex.
Warren, Ohio

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PRODUCTS DESCRIBED IN OTHER SECTIONS

(1) Sheetrock-Pyrofill; Reinforced Roof Tile; Red Top Rib Floors; Pyrobar Ceiling Floor Proof Tile; Steel Roof Decks; Pyrobar Partition Tile; Beam and Column Fireproofing.

(2) Built-up Roofing, Asphalt Shingles and Roll Roofing.

(3) Sound Control Service—Architectural Acoustics and Noise Abatement.
Thermal Insulation Products.

(4) Expanded Metal Reinforcement, Partitions, etc.

(5) Paints.

UNITED STATES GYPSUM COMPANY

GENERAL COMMODITIES

Plastering Bases • Plastering Systems • Plasters
Wallboards

• • •

EXPERIENCE—The United States Gypsum Company is a pioneer in the gypsum industry in America. For more than thirty-five (35) years, the company—through its laboratories, experimental departments and field investigations—has closely studied the requirements of the building industry. Its formulae and mechanical equipment have been painstakingly designed to adapt each of its gypsum and other products to meet comprehensively these requirements.

USG Trade-Mark

COMPLETE DIVERSIFIED LINE OF PRODUCTS—Wherever gypsum is adapted to building uses there is a USG product specially designed to fulfill the particular requirement.

The broad scope of the company's gypsum and other products is indicated by the Products Index.

MANUFACTURING AND DISTRIBUTING FACILITIES—The superiority of USG products is based upon high grade raw material, perfected processes of manufacture and one control of the gypsum products from mining to shipping.

The forty-six mines, mills, and warehouses, strategically located throughout the United States, assure exceptional national distribution facilities and a product specially manufactured to fulfill variable local climatic conditions.

The list opposite shows the location of the fifty-four USG centers and visualizes these important service facilities.

SALES AND SERVICE FACILITIES—The twenty-one sales offices in the important building centers guarantee adequate service to architects.

THE TRADE-MARK—Products bearing the trade-mark of the United States Gypsum Company are safeguarded against imperfections. They are rigidly inspected by experts at every stage of production, from the selection of the raw materials to the shipment of the finished products.

Any variation from the highest USG Standard means rejection.

This rigid maintenance of quality over a long period of years has established the name and trademark of the United States Gypsum Company as synonymous with the highest standard of excellence in building materials.

GYPSUM • TECHNICAL DATA

GYPSUM—Chemically, Gypsum is hydrous calcium sulphate $CaSO_4.2H_2O$. It is a widely distributed mineral found in rock formation. The rock gypsum is crushed, ground and then calcined, which drives off a part of the molecular water, forming the hemi-hydrate or plaster of paris. This product, when mixed with water, recrystallizes or sets.

FIREPROOF—The superior qualities of gypsum as a fireproof building material have been definitely established by numerous tests made by the Underwriters' Laboratories, Inc., The Bureau of Standards, Columbia University, and by the bureau of buildings in many of the larger cities. (Authentic test data if desired will be furnished on request.)

The temperature of the unexposed side of the gypsum slab cannot exceed 212° F. while there is any water of crystallization in the gypsum. This is due to the fact that the water of crystallization in the gypsum must be vaporized during the application of fire to it, and as the gypsum slowly calcines, the cellular structure fills with steam. It is this barrier of calcined material which stubbornly resists the progress of the fire.

USG *Plastering Bases*

• • •

ROCKLATH • THE FIREPROOF LATH

Rigid Gypsum Board Lath Units

DESCRIPTION • TYPES • SIZES

STANDARD ROCKLATH*—Rocklath is a solid sheet of gypsum, ⅜ in. thick, 16 x 32 in. and 16 x 48 in., encased in a tough fibrous covering, forming a uniform, strong, fireproof plaster base. The fibrous covering affords uniform suction, insuring a permanent, strong bond with gypsum plaster. Rocklath is easily nailed to wood studding, furring or joists.

Rocklath has the USG* patented rounded reinforced folded edge which gives maximum strength, protects the boards, and does not injure the hands.

PERFORATED ROCKLATH*—Similar to Standard in 16 x 48 in. size only. It is provided with a mechanical plaster key consisting of 48 ¾-in. round hole perforations. Tests show a fire resistance rating of one hour, combustible on wood stud construction plastered with ½ in. of sanded (1 to 2) gypsum cement plaster.

INSULATING ROCKLATH*—Insulating Rocklath is standard ⅜-in. thick Rocklath, upon the back of which is mounted a thin, smooth, bright sheet of aluminum foil. It is applied in the same manner as standard Rocklath with the foil side next to the framing members.

Applied in this manner, its heat insulating value is equal to or better than ½ in. thick fiber insulating lath. For complete data, see USG "Thermal Insulation" section.

SIZES, WEIGHTS, ETC.—Standard Rocklath is made ⅜ in. thick and in two sizes—16 x 32 in. and 16 x 48 in. (perforated, 16 x 48 in. only). The boards are packed in bundles for easy handling and stacking—6 sheets to the bundle. Each bundle of 32-in. boards contains 21⅓ sq. ft. and weighs about 30 lbs.; each bundle of 48-in. boards contans 32 sq. ft. and weighs about 45 lbs.

Either size provides the usual vertical joint break without cutting.

SPECIFICATIONS—See Master Specifications, pages 28 and 30 for application of Rocklath and plastering.

*Trade-Mark

ADVANTAGES OF ROCKLATH

FIREPROOF—Does not burn or readily transmit heat. It interposes a continuous fireproof sheet of substantial thickness over the wood frame, thus tending to confine the fire to the room in which it originates. Does not disintegrate or corrode.

NO EXPANSION OR CONTRACTION—Does not expand, warp or buckle when wet plaster is applied, consequently will not shrink when plaster dries out.

AN IDEAL PLASTER BASE—The strong fiber covering with its uniform suction prevents the plaster from "slipping" when applied. Gypsum plaster is easily applied and bonds more firmly to Rocklath than to other types of lath. Because there is no sap in Rocklath, there is no consequent discoloration.

ECONOMY IN ERECTION—Compared with ordinary lath, Rocklath bundles are stacked and carried and the light weight units handled and erected quicker and with greater ease—there are no splinters. One piece of Rocklath equals 9 wood laths and requires 15 to 20 nails, depending on the size of the lath unit, instead of 27 or 36. One man will erect an average of from 125 to 150 sq. yds. a day compared with 100 to 115 sq. yds. with wood lath.

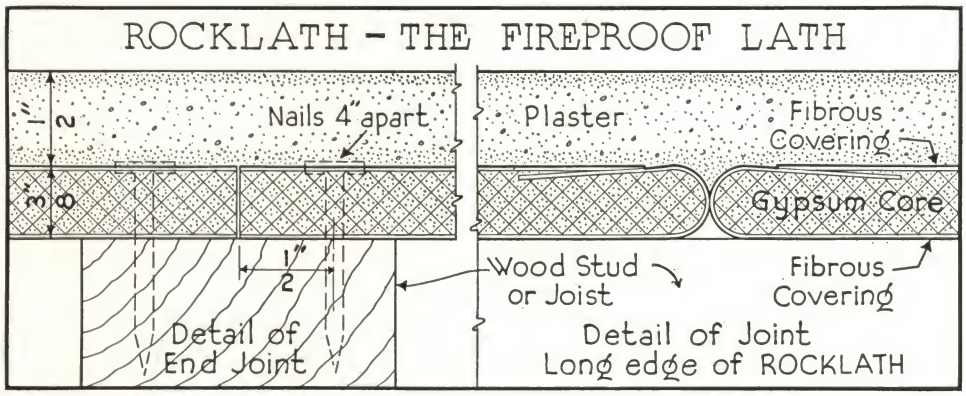
It scores and cuts cleanly and easily without waste.

UNIFORM THICKNESS — Since no plaster is lost through droppings pushed through the lath and the ragged keying plaster behind the lath, the thickness is uniform throughout and approximately 20% less plaster is required.

ELIMINATES MOISTURE—Rocklath needs no wetting before plaster is applied. The continuous dry gypsum sheet, ⅜ in. thick, eliminates its proportionate part of the usual wet plaster moisture and at the same time seals off the applied plaster moisture from contact with the absorptive wood framing, preventing much of the usual swelling and subsequent shrinkage.

Since there is less moisture present, the plaster and building are dry and ready for the application of interior wood trim and decorating in the minimum time.

COMPARATIVE COST—The completed wall (Rocklath and plaster) costs less than metal lath and plaster, and about the same as wood lath and plaster.



WEATHERWOOD* INSULATING LATH

Red Top Insulating Lath has an average low conductivity of .32 B.t.u.'s per hour, per sq. ft., per degree F., per inch thickness. It is made in 18x48-in. units, ½ and 1 in. thick. The longitudinal edges are matched to insure insulation continuity and strengthen the unsupported joint (an exclusive USG Co. feature). Edges also are beveled to assure strong plastering at the joints. The weight is but 750 lbs. per 1000 sq. ft. of half-inch material.

Authentic tests show that to rupture the bond between gypsum plaster and Red Top Insulating Lath requires over 1350 lbs. per sq. ft., the rupture occurring in the board itself.

For complete data, see the USG Co.'s section on "Thermal Insulation."

PYROBAR* PARTITION TILE

Pyrobar Partition and Furring Tile are 30 in. long, 12 in. high and of various thickness from 1½ to 6 in. Pyrobar Tile meets fully the standard specifications for Gypsum Partition Tile or block of the American Society for Testing Materials. All Pyrobar Gypsum Tile bear the trade-mark. Column fireproofing is accomplished either with 2-in. solid or 3-in. hollow Pyrobar Partition Tile.

Pyrobar Beam and Girder Fireproofing is made from the same materials as Pyrobar Partition Tile. Specially formed Pyrobar Shoe Tile, Angle Tile and Soffit Tile, which fit over the lower flanges of the steel are used to fireproof steel flanges of beams and girders.

For complete data, see the USG Co.'s "Engineering Sales Division" section.

*Registered Trade-Mark

RED TOP* METAL LATH and ACCESSORIES

INTRODUCTION

That the United States Gypsum Company might furnish all materials required for lathing and plastering, it acquired the metal lath division of the Youngstown Pressed Steel Company and the North Western Expanded Metal Company, both for many years well and favorably known in the industry. As a result, those whom the company serves have the advantages of mixed car shipments and of centralized responsibility.

The high quality products of the two metal lath companies will be found in the Red Top Line of Metal Lath Products. In addition, the Red Top Line includes many special accessories. All brands and types of metal are distinctly tagged for identification.

NOTE—*For application, see Master Specifications.*

RED TOP DIAMOND MESH LATH (JUNIOR MESH)

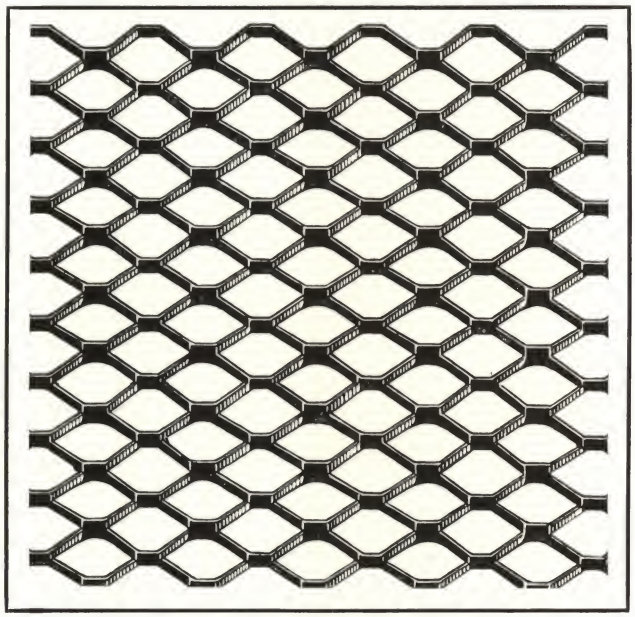
Description—A small (5/16" x 9/16") diamond mesh expanded metal lath (patented). The stiff sheets are easy to erect. The small mesh enables the lather to engage a greater number of strands in nailing or tying, yet the "diamonds" are amply large to freely admit the tie wire. Mortar spreads easily on the smooth stiff surface, without waste; the small mesh affords a superbly keyed bond.

Weights—2.2, 2.5, 3.0, 3.4 lbs. per sq. yd.

Materials—(1) Open hearth steel, painted black in all weights. (2) Galvanized steel in 2.5 and 3.4 lb weights. (3) Copper bearing steel (so tagged), painted black in all weights. (4) Armco Ingot Iron (so tagged), painted black in 2.5, 3.0 and 3.4 lb. weights. (5) Copper Bearing Galvanized, and Armco Ingot Iron Galvanized in 2.5 and 3.4 lb. weights also available on special order.

Self-furring and Corrugated—All above weights and materials furnished in the Self-furring and Corrugated types.

Sheet Size—27 x 96 in., packed 10 sheets (20 sq. yds.) per bundle. Also size 24 x 96 in., packed 9 sheets (16 sq. yds.) per bundle on order.



RED TOP DIAMOND MESH LATH

RED TOP 1/8 in. Z-RIB LATH (Flat Rib)

Description—A distinctive type of flat rib lath for nailing on wood construction or tying on metal furring. The narrow "Z" ribs (1/8 in. deep, 1 1/2 in. o.c.) add exceptional rigidity and provide shelves which hold the wet plaster in place, both front and back, without waste.

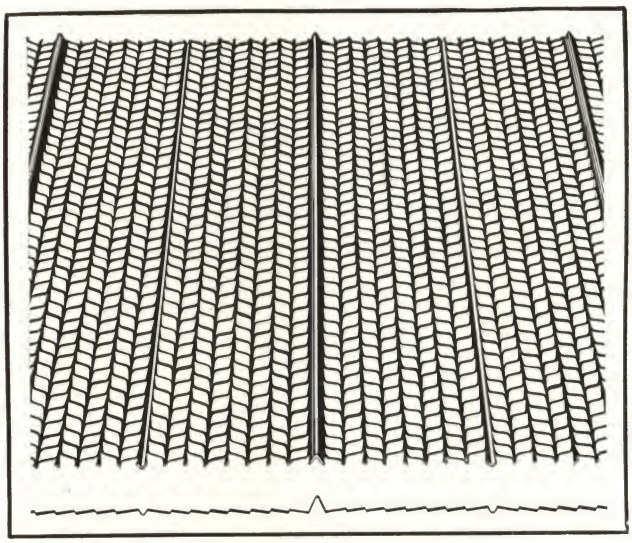
Weights—2.75, 3.0, 3.4 lbs. per sq. yd.

Materials—(1) Open hearth steel, painted black, in all weights. (2) Copper bearing steel (so tagged), painted black, in all weights. (3) Galvanized steel in 3.4 lb. weight. (4) Armco Ingot Iron (so tagged) painted black, in 3.4 lb. weight on special order.

Sheet Size—24 x 96 in., packed 9 sheets (16 sq. yds.) per bundle.

RED TOP 1/8 IN. Z-RIB LATH

*Trade-Mark



RED TOP ⅜ IN. RIB LATH

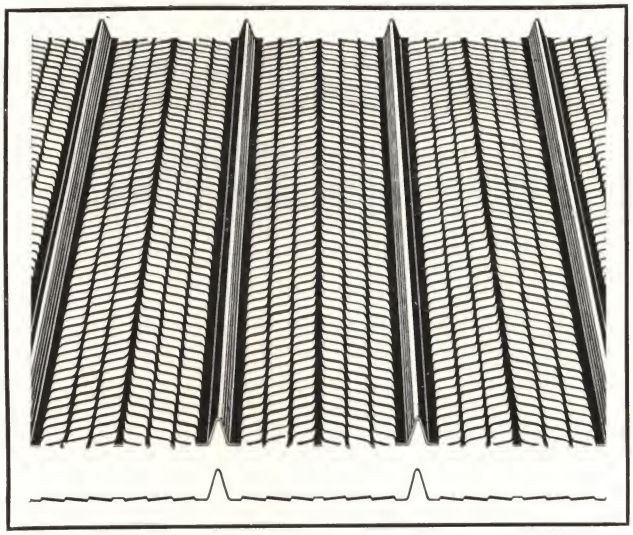
RED TOP ⅜ in. RIB LATH

Description—A very rigid reinforcement for use in floor and ceiling construction with steel joists, also ceilings under steel tile construction and where wide spacing of supports are desired. It provides for nested lap at the outside ribs with no lumps. Its use assures a permanent, economical and absolutely satisfactory result in every way.

Weights—2.5, 3.0, 3.4, 4.0 lbs. per sq. yd.

Materials—(1) Open hearth steel, painted black, in all weights. (2) Copper bearing steel (so tagged), painted black, in all weights. (3) Armco Ingot Iron (so tagged), painted black, in 3.4 and 4.0 weights. (4) Galvanized steel in 3.4 and 4.0 lb. weights.

Sheet Size—24 x 96 in., packed 9 sheets (16 sq. yds.) per bundle.



RED TOP ¾ IN RIB LATH

RED TOP ¾ in. RIB LATH

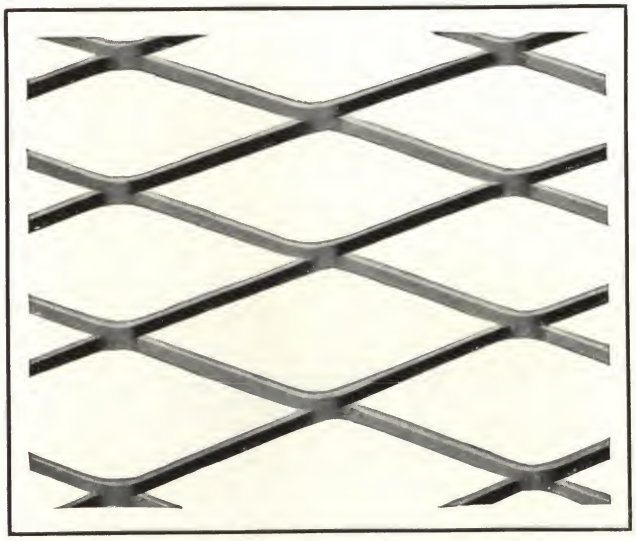
Description—The exceptional stiffness (ribs ¾ in., 4.8 in., o.c.) of this heavy weight, self-furring, expanded metal lath adapts it particularly for centering and reinforcement for concrete roofs and floors, and for plaster partitions and ceilings on extremely wide spacing of supports. Advantageously used on many forms of special work, such as column and beam protection, balconies, concrete tanks and fences, etc.

Weights—.50 (28 ga.), .60 (26 ga.), .75 (24 ga.) lbs. per square foot.

NOTE—*¾-in. Rib Lath is sold by the square foot. All other lath types sold by the square yard.*

Materials—(1) Open hearth steel, painted black. (2) Copper bearing steel (so tagged), painted black (on special order only).

Sheet Size—24 in. wide, 8, 10 and 12 ft. long (other lengths on special order).



RED TOP EXPANDED STUCCOMESH

RED TOP EXPANDED STUCCOMESH

Description—An expanded metal reinforcement for exterior stucco, cold-drawn from the highest grade of copper bearing steel into diamond mesh 1⅜ x 3⅛ in. wide. Its diagonal strands provide a correct distribution of steel to overcome the initial shrinkage, temperature changes and wind stresses, and a positive protection against unusual shocks. Apply with Red Top Economy Stucco Furring Nails.

Weights—1.8, 3.6 lbs. per sq. yd.

Materials—Copper bearing steel (so tagged), painted black. (Plain steel and galvanized steel on order.)

Sheet Size—48 in. wide x 99 in. long. Packed 10 sheets (36⅔ square yards) to the bundle.

RED TOP BOSTWICK SHEETLATH

Description—A stiff, heavy weight sheet lath particularly adapted to reinforcement of plaster, cement reinforcement for tile, marble, etc.

Materials and Weights—Open hearth steel, painted black, 4.5 lbs. per sq. yd. Galvanized steel, 5.2 lbs. per sq. yd.

Sheet Size—24 x 96 in., packed 9 sheets (16 sq. yds.) per bundle.

ECONOMY* STUCCO FURRING NAILS

Description—A special nail for applying and furring Red Top Stuccomesh. Provides a furring device with sliding spacer and rib, which securely holds reinforcing mesh in the center of the stucco slab.

Size—No. 5, 1½ in., ⅜-in. spacer.

Packed—Packed 850 nails per box, 10 boxes (8500 nails) per case. One box is estimated as sufficient for 50 sq. yds.

RED TOP CORNERITE

Description—Diamond Mesh Angle, with special selvage edge.

Weight—125 lbs. per 1000 ft.

Size—3 x 3 x 96 in., packed 504 ft. per bundle. (Other sizes on order.)

RED TOP STRIPLATH

Description—Diamond Mesh Lath Strips with special selvage edge.

Weight—60 lbs. per 1000 ft.

Size—3 x 96 in., packed 504 ft. per bundle. (Other sizes on order.)

BASE SCREEDS and PICTURE MOULD

Descripiton—Standard base screeds to form dividing line and screed between plaster walls and cement or composition base. A concealed picture mould and screed.

Material—Galvanized steel of 26 gauge.

TYPES and WEIGHTS

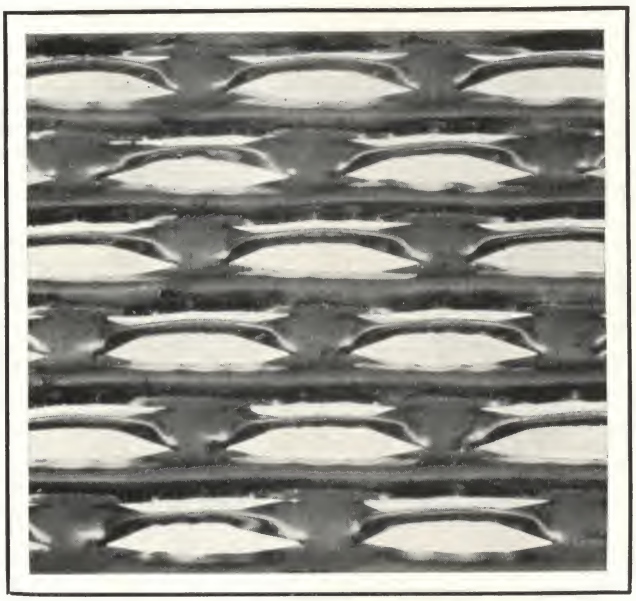
No. 3A—Expansion Flush Screed, ½-in. ground; weight 230 lbs. per 1000 lin. ft.

No. 6A—Plain Screed, ½-in. ground; weight 180 lbs. per 1000 lin. ft. (¾-in. ground on order.)

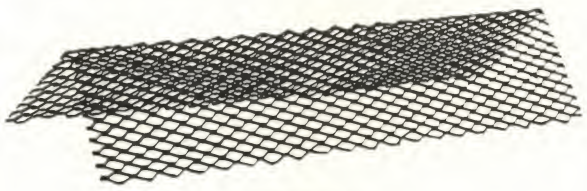
No. 7A—Curved Point Screed, ½-in. ground; weight 189 lbs. per 1000 lin. ft.

No 8A—Picture Mould; weight 230 lbs. per 1000 lin. ft.

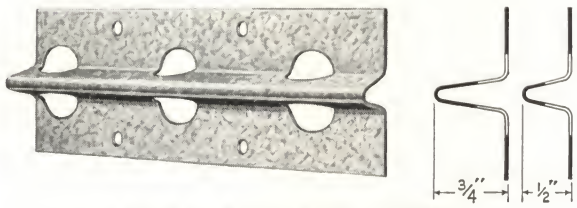
Packed—Packed 10 pieces per bundle.



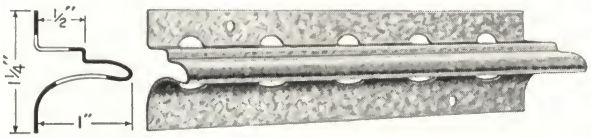
RED TOP BOSTWICK SHEET LATH



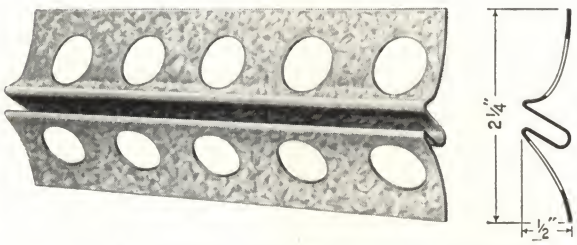
CORNERITE



No. 6A PLAIN BASE SCREED

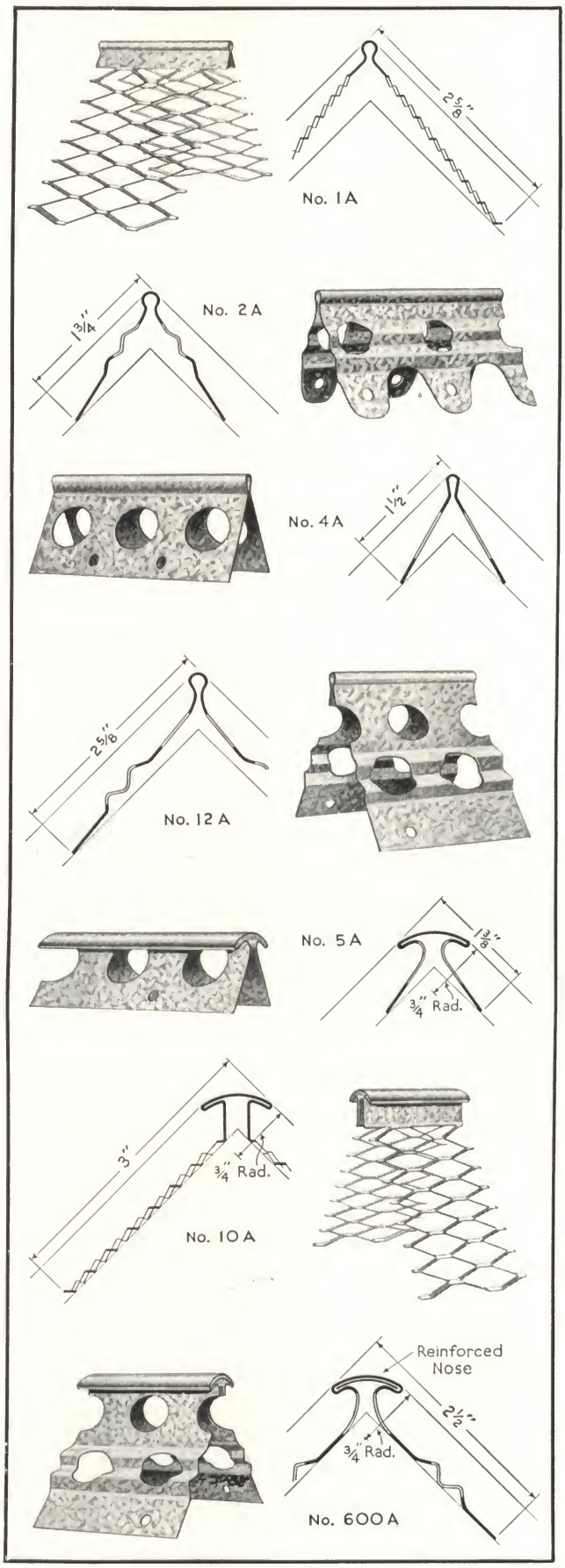


No. 7A CURVED POINT BASE SCREED



No. 8A CONCEALED PICTURE MOULDING

*Trade-Mark



RED TOP CORNER BEADS

Description—A complete line of standard, high grade corner beads adapted to every construction need.

Material—Galvanized steel 26 gauge. 24-gauge material also furnished on special order.

SMALL NOSE CORNER BEADS TYPES and WEIGHTS

No. 1A—2½-in. Expansion Flange Type—230 lbs. per 1000 lin. ft.

No. 2A—1½-in. Short Scalloped Flange Type—208 lbs. per 1000 lin. ft.

No. 4A—1¼-in. Flange Standard Type—200 lbs. per 1000 lin. ft.

No. 12A—2½-in. Wide Flange Type—330 lbs. per 1000 lin. ft.

No. 16A—2½-in. Wide Scalloped Flange Type—330 lbs. per 1000 lin ft.

BULL NOSE CORNER BEADS TYPES and WEIGHTS

No. 5A—1¼-in. Short Flange ¾ in. Radius Bull Nose —273 lbs. per 1000 lin. ft.

No. 10A—2½-in. Expansion Flange ¾ in. Radius Bull Nose—375 lbs. per 1000 lin. ft.

No. 80A—2½-in. Expansion Flange 1½ in. Radius Bull Nose—550 lbs. per 1000 lin. ft.

No. 90A—2½-in. Expansion Flange 2 in. Radius Bull Nose—900 lbs. per 1000 lin. ft.

No. 600A—2½ in. Solid Flange ¾ in. Radius Bull Nose—reinforced nose—574 lbs. per 1000 lin. ft.

No. 603A—2½ in. Solid Flange 1½ in. Radius Bull Nose—reinforced nose—888 lbs. per 1000 lin. ft.

No. 14A—2½ in. Solid Flange ¾ in. Radius Bull Nose —non-reinforced nose—404 lbs. per 1000 lin. ft.

Packed—Crated approximately 500 lineal feet per crate, or packed 10 pieces per bundle. Expansion Beads crated only.

NO. 9A HUMP CLIPS

A 3-inch clip attachment for short flange beads to facilitate erection. Made from blued steel. Used generally with No. 5A Bull Nose Bead. Packed in boxes of 1000 each weighing 25 pounds.

RED TOP METAL ARCHES

Description—A ready-formed plastering arch for doorways, etc. Eliminates two difficult operations—the construction of curved wooden forms and the forming of corner beads around these curves. They are made for standard 2 x 4-in. partitions. The various units have many obvious combination possibilities.

Manufactured under License of Merryweather Patent No. 1782147 granted Nov. 18, 1930.

TYPES and SIZES

No. 11—10-in. radius (true half circle) for 20-in. opening (21½-in. stud space).

No. 22—15¾-in. radius (true half circle) for 30-in. opening (33-in. stud space).

No. 33—Gothic design for 2 ft. 6 in. opening (33-in. stud space).

No. 44—Gothic design for 4 ft. 0 in. opening (51-in. stud space). (Can be easily cut down to fit a 42-in. doorway.)

No. 55—Elliptic design for 5 ft. 0 in. opening (63-in. stud space).

No. 66—Elliptic design for 6 ft. 0 in. opening (72-in. stud space).

Material—"Galvannealed" sheet steel.

Packed—In individual one-set cartons.

INNERWALL* FURRING BRACKETS

Description—A patented bracket for furring outside masonry walls for rapid metal lath erection. They provide an innerwall clear air space. These brackets are installed in the mortar joint as the work is laid up, approximately 6 in. on centers vertically and 12 in. on centers horizontally.

SIZES and APPROXIMATE SHIPPING WEIGHTS

No. 1—1¼-in. furring space, 3-in. anchorage flange, 144 lbs. per 1000 brackets.

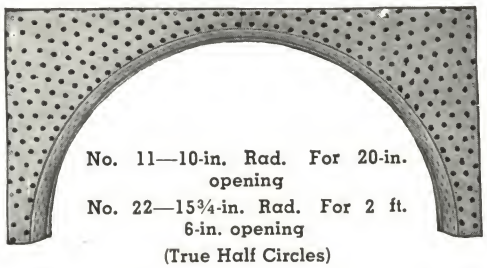
No. 2—2¼-in. furring space, 3-in. anchorage flange, 175 lbs. per 1000 brackets.

No. 3—3¼-in. furring space, 3-in. anchorage flange, 203 lbs. per 1000 brackets.

No. 4—4¼-in. furring space, 4-in. anchorage flange, 255 lbs. per 1000 brackets.

Material—16 gauge copper bearing steel, painted black.

Packed—100 brackets to the carton.

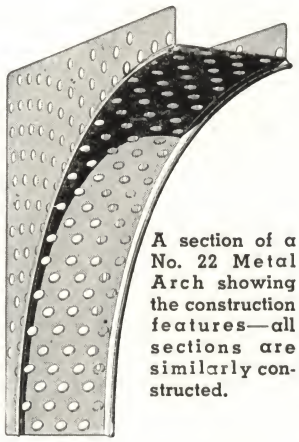


No. 11—10-in. Rad. For 20-in. opening
No. 22—15¾-in. Rad. For 2 ft. 6-in. opening
(True Half Circles)

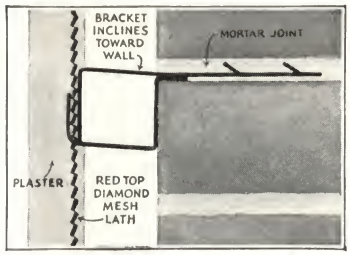
No. 33—For 2 ft. 6-in. opening
No. 44—For 4 ft. 6-in. opening
Gothic Design

No. 55—For 5-ft. opening
No. 66—For 6-ft. opening
Elliptic Design

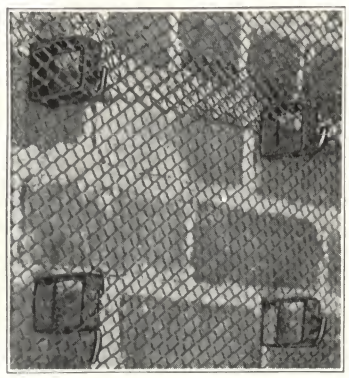
RED TOP METAL PLASTER ARCHES



A section of a No. 22 Metal Arch showing the construction features—all sections are similarly constructed.



RED TOP INNERWALL FURRING BRACKETS



*Trade-Mark

RED TOP COLD ROLLED CHANNELS

Description—A complete line of cold rolled channels for furring, suspended ceiling and partition construction. The legs and webs are true and have square corners. They can be readily spliced and formed.

Material—Open hearth steel.

Stock Lengths—14, 16, 18, 20 feet.

SIZES and WEIGHTS

NOTE—*Sold only in full, unbroken bundles.*

¾ in.—276 lbs. per 1000 lin. ft.; packed 20 pieces to bundle.

1 in.—332 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

1½ in.—442 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

2 in.—553 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

Pencil Channels—7/16 x 7/16 in., 113 lbs. per 1000 lin. ft., packed 20 pieces to bundle. (12 and 14-ft. lengths only.)

Box Channels—9/16 x 1 1/16 in., 276 lbs. per 1000 lin. ft., packed 20 pieces to bundle. (16 and 20-ft. lengths only.)

RED TOP LATHING SUNDRIES

General—The following sundries supplement the Red Top Line of Lathing and Plastering Accessories. In addition, practically any other sundry item necessary for lathing can be furnished.

HOT ROLLED SHAPES and ROUND RODS

Flats—1 x ⅛ in., 1 x 3/16 in.

Angles—1½ x 1½ x ⅛ in., 1½ x 1½ x 3/16 in.

Channels—¾ in., 1 in., 1½ in., 2 in.

Round Rods—3/16 in., ¼ in., and 7/32 in. in diameter.

CLIPS, TIE WIRE, NAILS and STAPLES

No. 1 Lath Clips—Lath Clips for attaching diamond mesh or flat lath to ¾-in. channels.

No. 2 Lath Clips—Lath Clips for attaching ⅜-in. Rib Lath to ¾-in. channels.

No. 3 Lath Clips—Lath Clips for attaching ⅜-in. Rib Lath to steel joists.

No. 1½A Channel Clips—Channel Clips for attaching ¾-in. channels to 1½-in. channels.

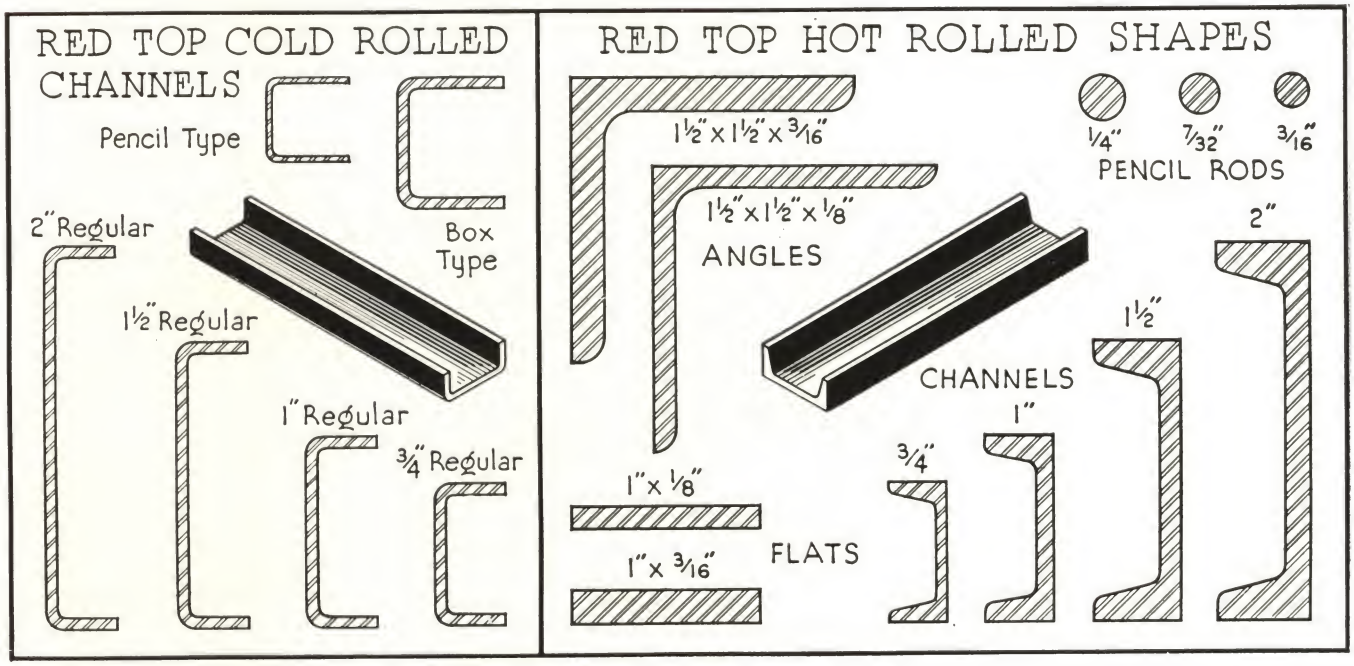
No. 1½B Channel Clips—Channel Clips for attaching 1-in. channels to 1½-in. channels.

No. 2A Channel Clips—Channel Clips for attaching ¾-in. channels to 2-in. channels.

No. 2B Channel Clips—Channel Clips for attaching 1-in. channels to 2-in. channels.

Tie Wire—18, 16, 14, 10, 9, and 8 gauge, galvanized annealed.

Nails and Staples—4d Blued Nails; ¾-in. Concrete Stub Nails; 1 and 1¼-in. Blued Staples.



USG Steel·H·Studs*

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A MODERN, FIREPROOF SYSTEM OF PARTITION CONSTRUCTION

EASY TO ERECT—Because of practical design, light weight, and the adjustable feature, Steel-H-Hollow Stud Partitions are easily and quickly erected. One workman can erect the system. The studs are placed in runner tracks which are attached to floor and ceiling. They are secured at proper spacing with wire, looped in holes provided on the flanges. Metal lath attachment is standard practice.

ADJUSTABLE—Steel-H-Studs are adjustable to variance in ceiling heights. The sliding extension permits an upward extension of two inches or a reduction from the stock length of six inches. A ten-foot stud, therefore, is adjustable from nine feet, six inches to ten feet, two inches. This adjustable feature which becomes an integral part of a Steel-H-Stud is a time and labor saver.

RIGID—The unique "H" design provides a bracing effect which adds rigidity and strength that enables the partition to resist impacts, vibration, etc. When properly erected and plastered, a Steel-H-Partition should have strength equal to a tile or precast block partition of equal thickness.

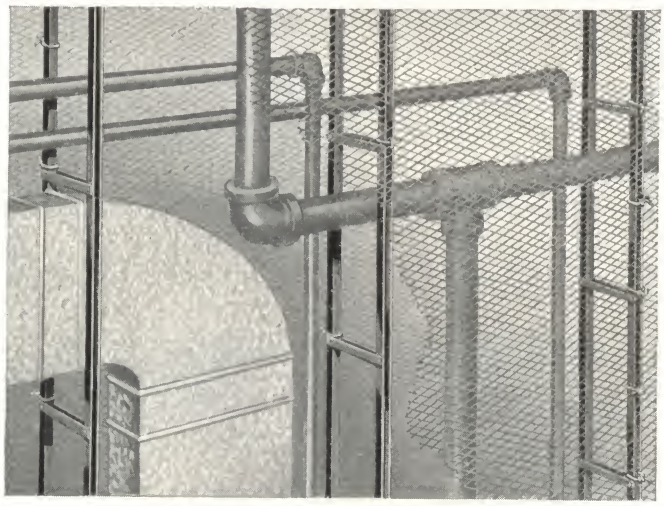
EASY TO PLASTER—Because Steel-H-Studs provide a rigid support for the metal lath plaster base, the procedure of plastering in no way differs from a regular metal lath job. The type of lath to be used depends upon the stud spacing. The legs or open side of the stud face the lath.

CONCEALS VENTILATING DUCTS, PIPES, ETC.—The fact that Steel-H-Studs provide a hollow partition, ventilating ducts, pipes, conduits, etc. can be concealed by running them through the studs in the ample space provided between the cross supports and the uprights. Since the cross-bracings are twelve inches on center, ventilating ducts can be run horizontally, as well as vertically, through the partition. Two-inch pipes can be run through a 3¼-inch Steel-H-Stud.

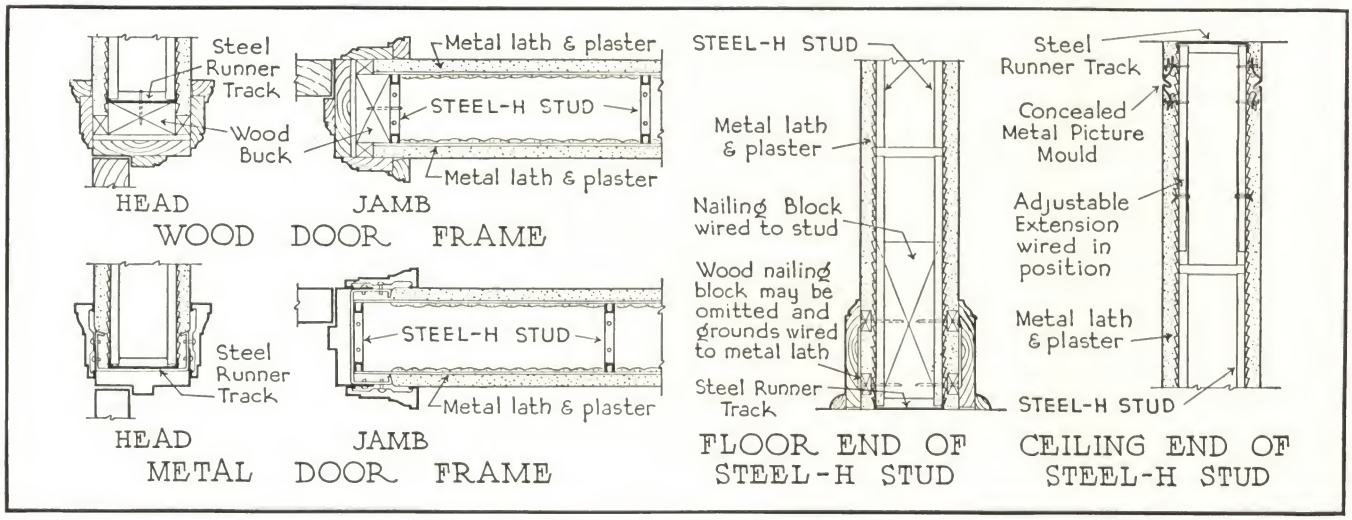
STOCK SIZES—Lengths—7, 8, 9, 10, and 12 feet. These are the stock or "fixed" lengths. The adjustable feature on each of these lengths permit adjustment from six inches under to two inches over the stock length purchased.

Widths—2, 3, 3¼, 4, and 6 inches. Five popular sizes to meet average requirements. Packed in bundles of convenient size to fit order requirements.

RUNNER TRACKS—Made in eight-foot, two-inch lengths. Packed in bundles of convenient size to fit order requirements.



A six-inch Steel-H-Stud Partition allows ample room for concealing 4 in. by 10 in. duct work, both vertical and horizontal runs. In addition, there is unrestricted space for piping.



*Trade-Mark

USG *Plastering Systems*

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USG RESILIENT PLASTERING SYSTEMS

Economical Bases for Plaster
More Sound-Proof and Crack-Proof
Eliminate Lath Streaks

•

GENERAL DESCRIPTION

The USG Resilient Plastering Systems are an adaptation of the highly successful USG Sound Control System of resiliently connected walls, ceilings, and floors. This adaptation permits Rocklath (gypsum lath units) or metal lath and plaster to be connected to wood or steel framing or furring members of walls, partitions, and ceilings by means of spring clips which form a floating unit. There are two distinct types of the USG Resilient Plastering System—namely, that using Rocklath for a plaster base and that using Red Top Metal Lath as a plaster base as described on page 12 and detailed on pages 14 and 16.

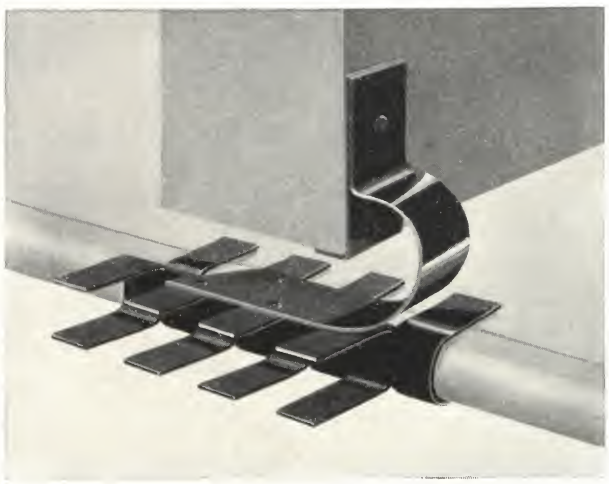
ADVANTAGES

REDUCES PLASTER CRACKS — Ordinary settlement and movement in the structural framing is not transmitted to the plastered walls and ceilings because of the free floating construction.

STOPS SOUND—Sound that strikes the plaster finish and sets it in vibration is largely dissipated by the springs supporting the lath. Instead of the construction vibrating as a unit and thus setting up sound waves on the opposite side of the partition or ceiling, the lath and plaster finish vibrates as a unit suspended on springs more or less separate from its supports.

A partition built according to this specification provides a sound reduction of approximately 46 decibels. (This is equal to or better than two 3-in. tile partitions with a 1-in. air space between—a construction often used for its soundproofing efficiency.)

This system is probably even more useful on ceilings than walls. Its feature of resilient action is very effective against ceiling cracks. It also eliminates lath marks and provides efficient sound insulation between stories.



ELIMINATES STREAKING—The floating construction prevents the formation of lath and joist marks that otherwise develop due to differences in heat passage.

FIREPROOF—All materials used in this construction are fireproof. See pages 1 and 3 for fireproof qualities of gypsum and Rocklath. Metal lath is likewise a recognized fireproof plaster base.

EASILY ERECTED—The system is erected by the lather. The clip is nailed to the wood framing with one Rocklath nail and the Rocklath is set in the clip. In metal lath construction, the lath is tied to the clip.

LOW IN COST—The cost of the materials is the same as in the standard Rocklath and Metal Lath plaster base installations except for the addition of the clips, partly offset in the case of the Rocklath wood frame construction by the saving in cost of nails, since only about one-fourth as many nails are required as for the standard Rocklath application.

*Trade-Mark

TWO TYPES of RESILIENT PLASTERING SYSTEM

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USG ROCKLATH RESILIENT PLASTERING SYSTEM*

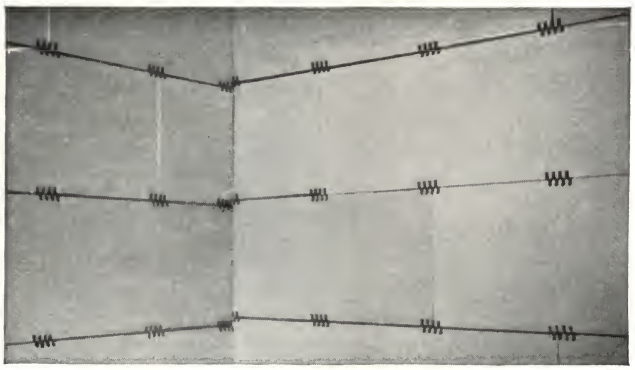
WOOD FRAMING—The spring clips attached 16 in. on center to each framing member hold the back of the lath ¼ in. away from the face of the framing member. The prongs engage the long side of the Rocklath.

The construction therefore is 1⅛ in. thick from the framing member face to the face of the plaster (¼-in. space back of the lath, ⅜-in. lath thickness, ½-in. plaster).

STEEL STUD PARTITIONS—To the floor and ceiling construction are attached, 16 in. o.c., steel stud seats. In the seats are attached USG No. 600 1¾-in. Cold Rolled Channels with crimped flanges. To the stud flanges, resilient clips are attached on both sides supporting gypsum lath in the manner above described. The partition is 4¼-in. thick from face of plaster to face of plaster.

SUSPENDED FIREPROOF CEILINGS—1½-in. runner channels, 4 ft. apart on centers are suspended in the usual manner from the floor construction. Cross furring of ¾-in. channels, 16 in. o.c., are attached in the usual manner to the runner channels. To the furring channels are attached the resilient clips supporting gypsum lath in the manner above described. In the case of bar joists the runner channels are omitted and the ¾-in. furring channels are clipped directly to the bottom flange of the joist.

USG Resilient Plastering System on ceiling and side walls. These walls which are furred over brick use a No. 4 clip, ceilings a No. 1 clip.



No special clip used in vertical corner angles. Same clip used here as in rest of wall area. All lathing over wood framework done with three clips or less.

USG METAL LATH RESILIENT PLASTERING SYSTEM*

WOOD FRAMING—The spring clips are attached 12 in. on centers to each framing member. The metal lath is wired directly to the face of each clip which sets the back of the lath ⅜ in. away from the face of the framing member. The construction therefore is 1⅛ in. thick from the framing member face to the face of the plaster (⅜ in. space back of lath, ¾ in. lath and plaster thickness).

STEEL STUD PARTITIONS—To the floor and ceiling construction are attached 16 in. o.c. steel stud seats. In the seats are attached specially designed 1¾ in. cold rolled steel channel studs. To the stud double resilient clips are attached 12 in. o.c. and to the faces of these clips the metal lath is wired directly to each clip. The partition is 4 in. thick from face of plaster to face of plaster.

FIREPROOF MASONRY WALL FURRING—Resilient clips are attached 18 in. o.c. vertically to support ¾ in. furring channels wired vertically 16 in. o.c. to the wall side of the clip face. The metal lath is attached in the usual manner to the vertical furring channels. The construction is 1¾ in. thick from face of wall to face of plaster.

SUSPENDED FIREPROOF CEILINGS—1½ in. runner channels, 4 ft. apart on centers, are suspended in the usual manner from the floor construction. Resilient clips are attached 12 or 16 in. o.c. to the runner channels which in turn support ¾ in. channels. The metal lath is attached in the usual manner to the ¾ in. channels.

In concrete joist or pan construction wire hangers are cast into the joists 12 or 16 in. o.c. to which are attached resilient clips carrying ¾ in. channels similar to the construction described above for fireproofing masonry wall furring.

*Trade-Mark

Master Specifications

USG ROCKLATH RESILIENT PLASTERING SYSTEM

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words within brackets in bold face type are selective.*

(1) CORRELATIVE PROVISIONS

NOTE—*The following provisions should be included as they apply under the proper headings of the specifications to be executed by others.*

(1a) CARPENTRY WORK—

(1a1) Furring—All masonry surfaces shall be furred.

(1a2) Framing—All studding, joists, and furring shall be set plumb, level, and true, spaced accurately 16 in. on centers.

(1a3) Grounds—All grounds shall be 1⅛ in. thick (face of stud to face of finished plaster).

(1a4) Bucks—Furnish wood bucks of sizes detailed at all door openings rigidly attached to steel buck supports.

(1ab) ELECTRICAL CONSTRUCTION—All outlet boxes, etc., shall be accurately set with faces 1⅛ in. in front of the studding and joist line (flush with face of plaster when applied).

(2) WORK INCLUDED

NOTE—*Here list and locate all walls, partitions, and ceilings to be constructed with USG Rocklath Resilient Plastering System.*

(3) MATERIALS

(3a) GENERAL—All materials shall be made by the United States Gypsum Company, 300 West Adams Street, Chicago.

(3b) METAL FURRING—Red Top cold rolled channels, 1½ in. for runner channels and ¾ in for cross and wall furring.

(3c) ROCKLATH METAL PARTITION STUDS—USG No. 600 1¾ in. Cold Rolled Channels furnished with USG Rocklath Resilient Plastering System stud seats.

(3d) GYPSUM LATH—Rocklath, ⅜ in. thick, 16 in. wide, 32 or 48 in. long.

(3e) RESILIENT CLIPS—Clips for attachment of lath to framing shall be USG Rocklath Resilient Clips. These shall be of such design as to adapt them for use in the field of the lath, angles, for starting and finishing at floors and ceilings, and surrounding windows and other openings.

(3f) CORNERITE—3 x 3-in. Cornerite for all internal angles where gypsum lath is used.

(3g) CORNER BEADS—[Specify No. and Type] Red Top Galvanized Expanded Metal Corner Beads.

(4) APPLICATION

(4a) STANDARD WOOD FRAMING—Starting at the floor, ground strips shall be applied which also serve as a backing for wood trim. A No. 2 clip shall be nailed to the stud with clearance above the ground strip and the Rocklath inserted in the clip. Framing members are spaced 16 in. on center and a clip applied at each framing member. Next place No. 1 clips over the upper edge of the first course of lath units and attach the clips to the studs as above. Continue with successive courses of lath in similar manner, breaking end joints of lath units in alternate courses. A No. 2 Clip shall be used at the angle where the wall meets the ceiling.

(4b) STEEL STUD PARTITIONS—METAL FURRING—

(4b1) Attach metal stud seats to floors and ceilings spaced accurately 16 in. on centers and in line vertically. Set channel studs in seat clips plumb and true.

(4b2) Where so indicated on plans **[or listed in schedules]** exterior walls shall be furred with ¾-in. channels spaced 16 in. on centers with flange to wall. Furring channels shall be secured to floors and ceilings in a substantial manner. Channels shall be substantially secured to walls, every 3 ft. approximately with special hook nails driven into the mortar joints. Provide rigid framing at all openings.

(4b3) Starting at the floor hook No. 6B clips on each channel with the lower prongs of clips resting directly on the floor. In the upper prongs of these clips set the bottom of the first row of gypsum lath units. Place the next row of No. 6B clips over the upper edge of the first course of lath units, each attached to a metal stud. At the proper locations attach ½ in. thick grounds with ground staples to the face of the lath. Continue with successive courses of lath units, breaking end joints in alternate courses securing each with No. 6B clips set over the upper edges each attached to the metal stud. The top of the last course of lath units shall be secured at the ceiling in the stud seat clips.

(4c) STEEL FURRED OR SUSPENDED CEILINGS—

NOTE—*Construction of furred or suspended ceilings shal be as specified in (B2), page 27.*

Starting at one side of the ceiling hook a row of No. 5 clips on the flanges of the ¾-in. runner channels. Slip the edge of the first lath course into the clips thus provided. Hook the next row of No. 5 clips over the channel runners spaced 16 in. on centers and then slip the clip over the outer edges of the lath. Continue successive courses of lath in similar manner, breaking end joints of lath in alternate courses.

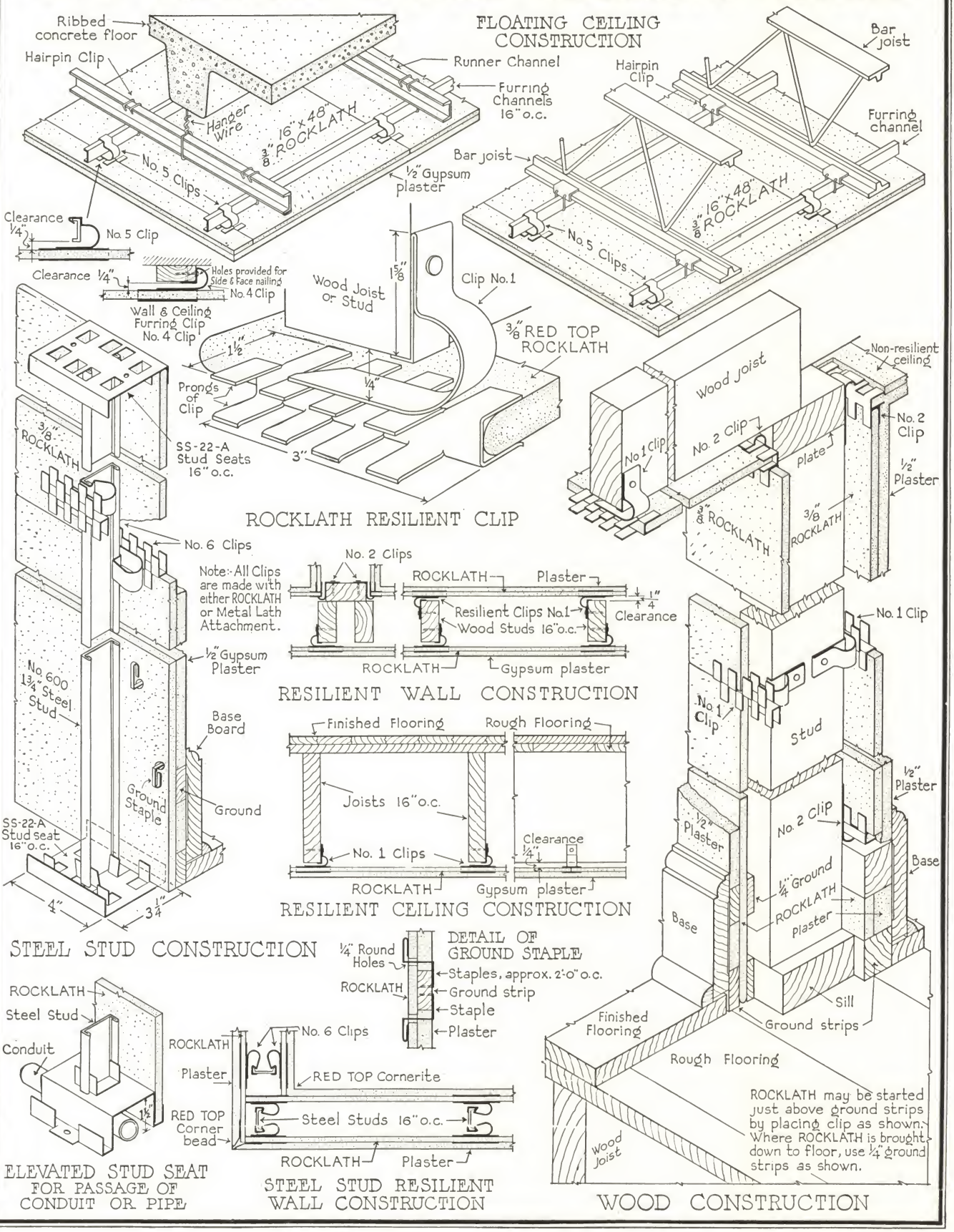
(4d) CORNERITE—Secure Cornerite over the face of the Rocklath in all internal angles of walls and ceilings with staples placed along the outer edge 12 in. apart on centers staggered.

(4e) CORNER BEADS—All external corners shall be reinforced for their full height or length with Corner Beads.

(4f) PLASTERING—

NOTE—*Follow standard specifications for plastering over gypsum lath as given in Master Specification, pages 25 to 33 inclusive. Plaster shall be full ½ in. thick.*

USG RESILIENT SYSTEM – ROCKLATH DETAILS



Master Specifications

USG METAL LATH RESILIENT PLASTERING SYSTEM

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words within brackets in bold face type are selective.*

(1) CORRELATIVE PROVISIONS

NOTE—*Correlative Provisions given in paragraph 1, page 13, applying to Rocklath Resilient Systems, apply also to these specifications.*

(2) WORK INCLUDED

NOTE—*Here list and locate all walls, partitions, and ceilings to be constructed with USG Resilient Plaster.*

(3) MATERIALS

(3a) GENERAL—All materials shall be made by the United States Gypsum Company, 300 West Adams Street, Chicago.

(3b) METAL FURRING—Red Top cold rolled channels, 1½ in. for runner channels and ¾ in. for cross and wall furring.

(3c) METAL LATH METAL PARTITION STUDS—Specially designed 1¾ in. cold rolled steel channel studs with USG Resilient Plastering System stud seats.

(3d) METAL LATH—[Specify brand, material and finish] lath; **(?)** lbs. for horizontal positions and **(?)** lbs. for vertical position.

NOTE—*See (C1d), page 28.*

(3e) RESILIENT CLIPS—Clips for attachment of lath to framing shall be USG Resilient Steel Clips. These shall be of such design as to adapt them for use in the field of the lath, angles, for starting and finishing at floors and ceilings, and surrounding windows and other openings.

(3f) CORNER BEADS—[Specify No. and Type] Red Top Galvanized Expanded Metal Corner Beads.

(4) APPLICATION

(4a) STANDARD WOOD FRAMING—

4a1) Starting at the floor, attach the first row of metal lath resilient clips immediately above the partition sole to each framing member. Continue with successive rows of clips spaced 12 in. apart o.c. vertically and in line horizontally. Set the last row of clips as close to the ceiling angle as possible. Allow for 6 in. ceiling turn-out or lap if required.

(4a2) On ceiling attach the first row of metal lath resilient clips to each ceiling joist as close to the wall angle as possible. Succeeding rows of clips shall be spaced 8 in. apart o.c. Set the last row of clips close to the opposite wall angle. Allow for 6 in. wall turn-out or lap if required.

(4b) STEEL STUD PARTITIONS—METAL WALL FURRING—

(4b1) Attach metal stud seats to floors and ceilings spaced accurately 16 in. on centers and in line vertically. Set channel studs in seat clips plumb and true. Double resilient clips shall be clipped to the metal studs 12 in. o.c. in aligned horizontal rows. The first row shall be set approximately 12 in. above the floor line. The last row shall be set as close to the ceiling angle as possible. Allow for 6 in. ceiling turn-out or lap if required.

(4b2) Exterior masonry wall shall be furred with ¾ in. channels spaced 16 in. o.c. with back of channel to the wall. Channels shall be wired to wall side of the faces of resilient clips, spaced 18 in. o.c. vertically and secured to the masonry with cut nails. Channels shall be secured at floors and ceilings in a substantial manner. Allow for 6 in. ceiling turn-out or lap if required.

(4c) MASONRY CEILINGS—Masonry ceilings shall be resiliently furred with ¾ in. channels spaced 12 or 16 in. o.c. with back of channel to the masonry. Channels shall be wired to ceiling side of the faces of resilient clips spaced 12 or 16 in. o.c. and secured to the masonry with hanger rods cast into the concrete. The first and last rows of clips shall be set close to the wall angles. Allow for 6 in. wall turn-out or lap if required.

(4d) STEEL FURRED OR SUSPENDED CEILINGS—

NOTE—*Suspension of runner channels for furred or suspended ceilings shall be as specified in (B2), page 27.*

Starting at one side of the ceiling, close to the wall angle, attach resilient clips to the runner channels in a continuous aligned row and attach a ¾-in. furring channel with flange up to the face of the resilient clip. Attach successive rows of resilient clips and furring channels 12 or 16 in. o.c. in similar manner. Set the last row of clips and channels close to the opposite wall angle. Allow for 6-in. wall turn-out or lap if required.

(4e) LATHING—

(4e1) Where there are furring channels attached to the resilient clips, metal lath shall be applied to the channels in the standard manner.

NOTE—*Paragraph (4e1) applies to metal wall furring masonry ceiling constructions and steel furred or suspended ceiling. See par. (C5), page 28.*

(4e2) Lath shall be wired directly to the face of each resilient clip, otherwise it shall be applied in the standard manner.

NOTE—*Paragraph (4e2) applies to standard wood framing and steel stud partitions. See par. (C5), page 28.*

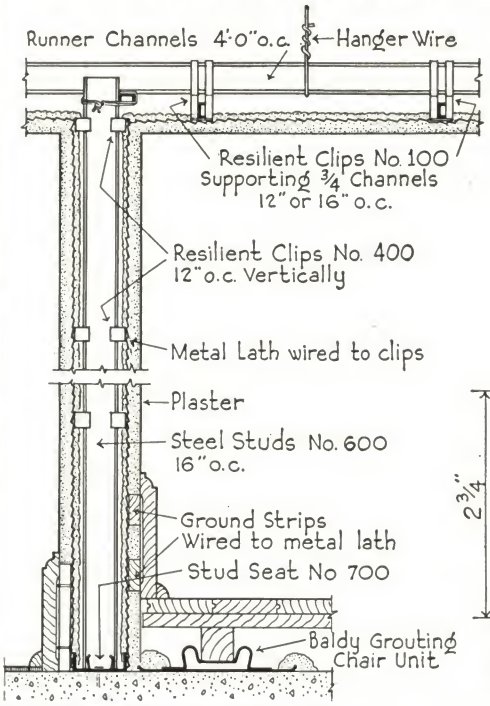
(4f) CORNER BEADS—All external corners shall be reinforced for their full height or length with Corner Beads.

(4g) PLASTERING

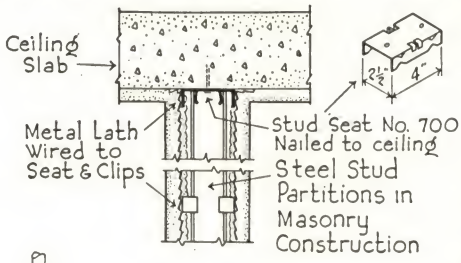
NOTE—*Follow standard specification for plastering over metal lath as given in Master Specification, pages 29 to 32 inclusive. Plaster shall be full ¾ in. from back face of lath to face of plaster.*

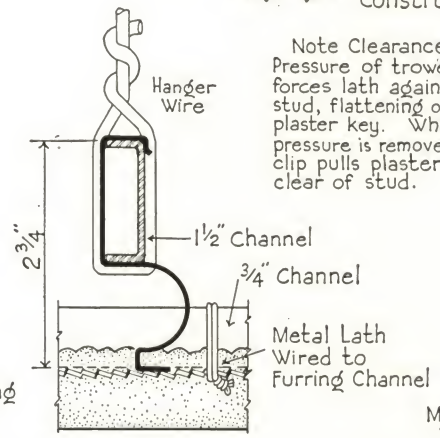
United States USG Gypsum Company

USG RESILIENT SYSTEM - METAL LATH DETAILS

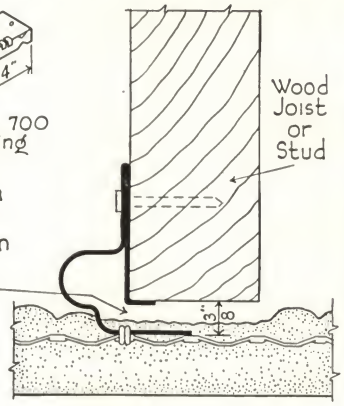


STEEL STUD PARTITION & SUSPENDED CEILING CONST.

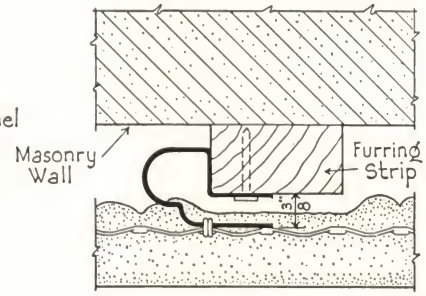




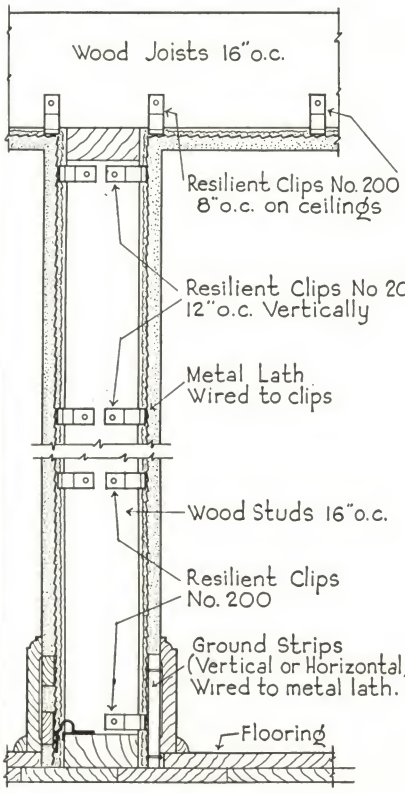
CLIP No. 100
For Suspended Ceilings



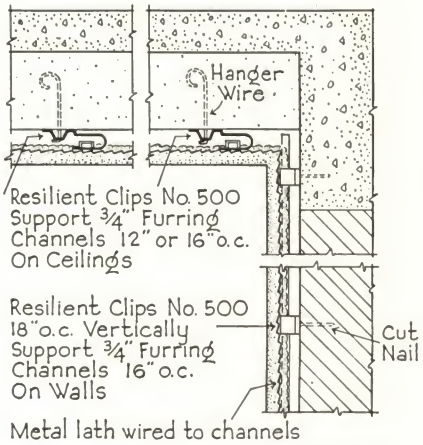
CLIP No. 200
For Wood Construction



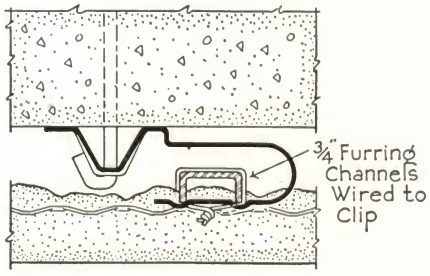
CLIP No. 300
For Wood Furring on Masonry Construction



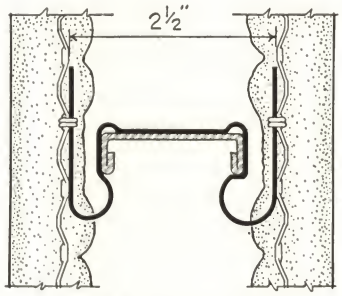
WOOD CONSTRUCTION



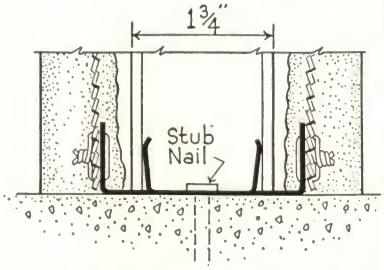
MASONRY CONSTRUCTION



CLIP No. 500
For Masonry Walls and Ceilings



CLIP No. 400
STEEL STUD No 600
For Steel Stud Partitions.



STUD SEAT No. 700
For Steel Stud Partitions

USG STANDARD X* PLASTERING SYSTEM

A Controlled System of Installation

Fireproof • Highly Crack Resisting • Moderate in Cost

•

GENERAL DESCRIPTION

INTRODUCTION—Through its over thirty-five years' experience in the manufacture and sale of lathing and plastering materials, the United States Gypsum Company has had forcibly impressed upon it the fact that unsatisfactory plaster work is usually the result of thinness ("skimming") of plaster coats, oversanding of plaster, or both. Exhaustive investigation has disclosed that these difficulties are eliminated with the Standard X Plastering System.

The Standard X Plastering System adequately provides at moderate cost all the factors for a satisfactory plastering job—a fireproof, verminproof, non-deteriorating lath with a strong plaster bond and a controlled system of installation. See Rocklath advantages, page 3.

PASSES THE ONE-HOUR FIRE TEST — This system has successfully withstood the Standard One-hour Fire Test in accordance with specifications of the American Society for Testing Materials.

DEFLECTION TESTS— Tests showing the strength or resistance to cracking of Standard X Plastering System as compared with standard metal lath and gypsum plaster laid to ¾-in. grounds, show conclusively the superiority of the Standard X System.

ELEMENTS — The Standard X Plastering System is formed of Standard X Lath, Standard X Metal Fabric, Standard X Base Coat and United States Gypsum Company finish.

Standard X Lath — Standard X Lath is a special gypsum lath ⅜ in. thick, 16 x 48 in., finished on the back with a moisture-resisting fiber of a distinctive red color. It is shipped in bundles to prevent injury.

Standard X Metal Fabric—Standard X Metal Fabrics, applied over all joints and corner angles after Standard X Lath has been erected, are composed of strips of expanded galvanized metal 3 in. wide, and made with a patented selvage edge.

Standard X Base Coat—Standard X Base Coat is a gypsum plaster scientifically compounded for use as part of the Standard X Plastering System. It is entirely factory-mixed. Nothing is added to Standard X Base Coat, before application, but water.

INSTALLATION—To assure maximum good workmanship where the Standard X Plastering System is installed, installation is by licensed plastering contractors only. In each locality the United States Gypsum Company issues licenses for the erection of the Standard X Plastering System to reliable contractors, who bind themselves to install the Standard X System according to complete specifications.

STANDARD X SUSPENDED CEILINGS— Standard X Suspended Ceiling System provides a strong, rigid and economical ceiling construction for any type of building requiring a suspended or attached ceiling.

Standard X Suspended Ceilings are hung in the manner regularly employed for supporting suspended ceilings, following standard lathing practice.

The complete construction is formed of hangers and main channels and where necessary ¾ in. runner channels; Standard X Clips, Metal Fabrics, Thumb Tacks, and Base Coats, and USG Finish Coat.

SPECIFICATIONS — Furnished on request.

*Registered Trade-Mark

USG *Plasters*

GYPSUM PLASTERS • GENERAL DATA

GENERAL FEATURES

DESCRIPTION—Gypsum Plasters are made by driving off water of crystallization from gypsum rock through calcination, or heat treatment. The addition of water to this basic product (calcined gypsum rock) forms a plastic mass which unites with the same amount of water as was driven off during calcination. When this plaster is mixed with water it re-crystallizes or sets.

QUICK-SET—FAST DRYING—Gypsum Plaster sets up uniformly hard and homogeneous within two to six hours after application. Inside of thirty-six hours, under proper drying conditions, the plaster dries and there is no further dampness or sweating.

ADVANTAGES

ADAPTABILITY—Gypsum Plaster adheres satisfactorily to gypsum, wood or metal lath; gypsum or clay tile; brick or other approved plastering surface.

FIRE RETARDING—Made of gypsum, it is fireproof.

EXCEPTIONAL ADHESIVENESS—Its exceptional adhesiveness greatly increases structural durability.

DOES NOT EXPAND OR CONTRACT—It does not expand and tear itself loose from the surface to which it is applied, even when subjected to fire. It will not crack of itself, shrink or stain.

DURABLE—Gypsum Plaster will withstand the wear and tear of occupancy during the life of the building. It affords a substantial foundation for the finish coat and applied decoration.

SAVES TIME—It sets in two to six hours and dries within 36 hours—interior trim and finish may thus, reasonably soon, follow the plastering without danger from moisture.

PLASTICITY, RICHNESS and "SLIP"—USG Plasters have been developed as much for the convenience of the plasterer as for the above qualities. The result is an unusual richness and "slip" which is appreciated by the competent mechanic. They mix easily at the mortar box; they go on quickly and spread far, resulting in maximum coverage with minimum labor.

UNIFORMITY

The quality of USG Plasters is rigidly controlled by repeated chemical tests, physical tests, and by effective inspection in every stage of manufacture, from the crude gypsum rock to the finished product. Samples from every shipment are retained for future reference.

All USG Plaster meets the standard specification for Gypsum Plaster of the American Society for Testing Materials.

The "Red Top Process" assures the maximum in economy, easy workability and bulk.

IDENTIFICATION • RED TOP* BAG

In addition to the USG trademark on each bag of plaster, the United States Gypsum Company's Plasters are contained in the standard Red Top bag, which provides a positive means of identification that discourages substitution.

The red top is assurance that the material in the bag has been made and tested according to most rigid specifications.

PLASTER PACKAGE

GENERAL—Every package of USG Gypsum Plaster bears the familiar trade-mark (see page 1), and bags have the Red Top. Each bag bears the brand and the mixing directions.

REINFORCED PAPER BAG—The paper bag, made of layers of strong kraft paper, is the standard bag of the United States Gypsum Company.

This bag gives adequate protection, keeping the plaster dry in the warehouse, and a sudden shower while the material is in transit or unprotected at the job will do little if any damage. It is light in weight, easily handled and stored. The dealer and contractor have no investment tied up in bags which are to be returned for credit; nor do they lose the value of sacks stolen from the job or damaged.

In view of these advantages in addition to their convenience we recommend the paper bag as the most satisfactory plaster package both from an economic as well as a practical view-point.

*Registered Trade-Mark

JUTE BAGS—When plaster is ordered in jute bags, these are sold with the plaster and credited when returned in good condition, freight prepaid, to the mill from which the plaster shipment was made. Return of bags must be made in accordance with our standard shipping directions and our customary terms.

Cloth or jute bags are of 100-lb. capacity.

BRANDS

The standardization nationally of USG plasters under the "Red Top" brand is a protection to the architect and a convenience to the trade.

The architect is assured that the quality of the plaster, from whatever mill shipped, will be identical.

When specifying "Red Top" for use in a distant city, the architect is assured (1) that the plaster will be the same as that with which he is familiar; (2) that a shipping mill is in close proximity; (3) that the plaster will be recognized as standard by the local mechanics.

COVERING CAPACITY

The covering capacity of USG Plasters is as great for each type of material as it is possible to obtain.

Covering capacity necessarily depends upon conditions under which the plaster is applied—upon the mechanic, thickness of grounds, kind and trueness of the surface to be plastered, spacing or voids of lath, quality of sand, etc.

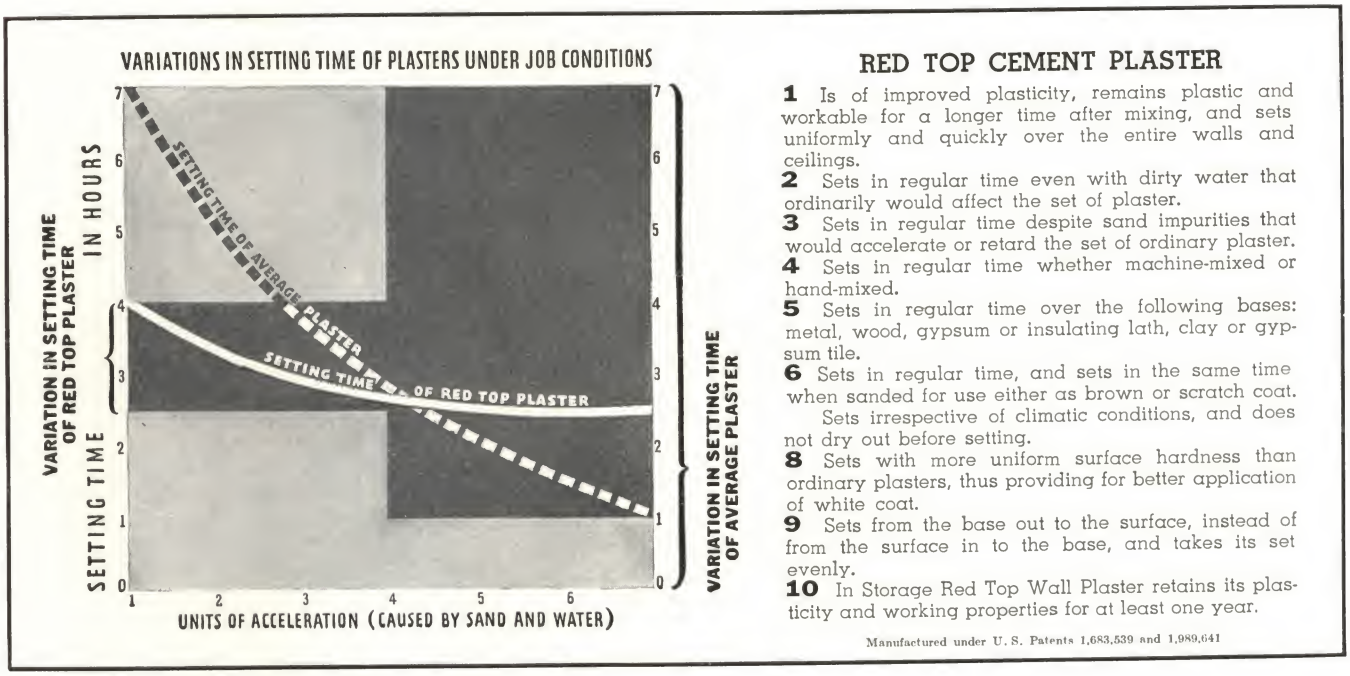
The covering capacity given hereinafter with each type of material and for the various surfaces to receive the plaster is based on average conditions, and may thus be accepted as a safe basis for calculating the quantity of each class of material that is required when the material is applied according to the Master Specifications given on pages 25 to 33 inclusive.

A NEW STANDARD of JOB PERFORMANCE for RED TOP CEMENT PLASTER

Cement Plaster is the most important plaster material used by the architect. This is true both from the standpoint of quantity used and dependability of results in the finished job. It is the foundation of most plastering work.

Therefore, it is important to every architect that he be acquainted with the significance of what Red Top Cement Plaster now does to overcome job difficulties. It almost entirely eliminates difficulties of setting time, the cause of the greatest percentage of plaster complaints. It is far less sensitive to job abuses that affect setting time. This is important to the architect not as an opportunity to relax supervision but as an assurance of greater dependability and greater uniformity in the finished job.

With varying amounts of sand (as specified for different bases) with varying fineness of sand and even against water that would normally accelerate the set of the plaster, Red Top Cement Plaster maintains a very uniform setting time. Additional literature will be sent to any architect who is interested in further details about this unique quality of Red Top Plaster.



RED TOP CEMENT PLASTER

1 Is of improved plasticity, remains plastic and workable for a longer time after mixing, and sets uniformly and quickly over the entire walls and ceilings.

2 Sets in regular time even with dirty water that ordinarily would affect the set of plaster.

3 Sets in regular time despite sand impurities that would accelerate or retard the set of ordinary plaster.

4 Sets in regular time whether machine-mixed or hand-mixed.

5 Sets in regular time over the following bases: metal, wood, gypsum or insulating lath, clay or gypsum tile.

6 Sets in regular time, and sets in the same time when sanded for use either as brown or scratch coat.

Sets irrespective of climatic conditions, and does not dry out before setting.

8 Sets with more uniform surface hardness than ordinary plasters, thus providing for better application of white coat.

9 Sets from the base out to the surface, instead of from the surface in to the base, and takes its set evenly.

10 In Storage Red Top Wall Plaster retains its plasticity and working properties for at least one year.

Manufactured under U. S. Patents 1,683,539 and 1,989,641

United States Gypsum Company

CEMENT PLASTERS

USE—Use for scratch and brown coats.

BRANDS—**Note**—*See "Brands," page 19.*

Red Top* Cement Plaster.

Red Top Eldorado* Cement Plaster (Gypsite).

Note—*Gypsite plasters, popularly known as "dark plasters," are well adapted to the climatic and building conditions of the Southwest.*

DESCRIPTION—Red Top Cement Plasters are "neat" materials—sand to be added at the job.

CHARACTERISTICS—These materials are unusually rich, spread well under the trowel and, when mixed properly with a good grade of sand, are uniformly satisfactory both in working qualities and ultimate results in the finished wall.

The "Red Top Process" assures the maximum in sand carrying capacity, easy workability and bulk.

Red Top Cement Plaster is manufactured under a patented process and will set in a uniform time over any base. Setting time is not affected by ordinary job conditions.

DIRECTIONS—

Mixing—(a) For scratch coat on gypsum, wood and metal lath, mix 2 parts by weight of dry sand with 1 part of plaster.

(b) For scratch coat on brick, gypsum and clay tile and for second (brown) coat over these bases as well as the bases in (a) mix 3 parts by weight of dry sand with 1 part of plaster.

Application—(a) ***On Wood Lath***—Soak lath. Apply in 2 coats. Apply scratch coat with sufficient pressure to obtain a good key. Darby brown coat lightly—use water sparingly.

(b) ***On Gypsum Lath***—Do not wet lath. Apply in 2 coats. Scratch coat shall be well scratched in to fill interstices between lath units. Darby brown coat lightly—use water sparingly.

(c) ***On Metal Lath***—Apply in 2 coats. Apply scratch coat lightly, covering lath and filling meshes. Scratch first coat and allow to set before applying brown coat. Darby brown coat lightly—use water sparingly.

(d) ***On Brick and Gypsum or Clay Tile***—Soak brick or clay tile walls. Sprinkle gypsum tile lightly. Apply in 2 coats. Darby lightly—use water sparingly.

PACKAGE—Shipped in full weight 100-lb. paper and jute bags.

COVERING CAPACITY—**Note**—*See "Covering Capacity," page 19.*

Basis—Under average conditions Gypsum Cement Plaster mixed and applied in accordance with standard specifications will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath	Brick and clay tile	Gypsum tile
Sq. yds per ton	180–210 (Sanded 2 to 1)	105–135 (Sanded 2 to 1)	225–240 (Sanded 2 to 1)	165–200 (Sanded 3 to 1)	235–255 (Sanded 3 to 1)

WOOD FIBER PLASTERS

USE—Use for scratch and brown coats.

BRANDS—**Note**—*See "Brands," page 19.*

Red Top Wood Fiber Plaster.

Red Top Eldorado Wood Fiber Plaster (Gypsite).

Note—*Gypsite plasters, popularly known as "dark plasters," are well adapted to the climatic and building conditions of the Southwest.*

DESCRIPTION—Wood Fiber Plasters are shipped ready to use, requiring only the addition of water. The base is Gypsum Plaster, to which is added finely shredded wood fiber, uniformly distributed.

CHARACTERISTICS—Wood fiber plaster avoids the handling of sand, the dangers of poor sand and oversanding. The smooth and fatty nature gives easy spreading and excellent working qualities.

Composed of gypsum and shredded wood fiber. When applied it is about two-thirds the weight of sanded cement plaster.

The plaster is practically pure gypsum, wood fiber serving as reinforcement and is extremely tough, strong, dense and durable.

It is superior to sanded plaster in fire-resisting, insulating and sound-deadening qualities. Its greater flexibility better adapts it to withstand vibrations and strains.

It is especially adaptable to alterations and is desirable for winter use. Wood Fiber Plaster may be sawed like wood.

DIRECTIONS—

Mixing—(a) ***Neat***—For wood and gypsum lath and scratch coat on metal lath, hoe plaster into water and allow to soak from 10 to 20 minutes. Then mix to proper consistency.

(b) ***Sanded***—For brown coat on metal lath and for all plaster on brick and gypsum or clay tile, mix as in (a) with equal parts by weight of plaster and dry sand.

Application—(a) ***On Wood Lath***—Soak lath. Apply in 2 coats. Apply scratch coat with sufficient pressure to obtain a good key and scratch the surface. Before brown coat begins to set, broom surface.

(b) ***On Gypsum Lath***—Do not wet lath. Apply in 2 coats. Scratch coat shall be well scratched in to fill interstices between lath units. Scratch first coat and allow to set before applying brown coat. Before brown coat begins to set, broom surface.

(c) ***On Metal Lath***—Apply in 2 coats. Scratch coat shall be applied a little stiff, covering lath and filling meshes. Before brown coat begins to set, broom surface.

(d) ***On Brick and Gypsum or Clay Tile***—Soak brick or clay tile walls. Sprinkle gypsum tile lightly. Apply in 2 coats. Before the brown coat begins to set, broom surface.

PACKAGE—Shipped in full weight 100-lb. paper and jute bags.

COVERING CAPACITY—**Note**—*See "Covering Capacity," page 19.*

Basis—Under average conditions Gypsum Wood Fiber Plaster mixed and applied in accordance with standard specifications will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath
Sq. yds. per ton	90–100 (Unsanded —water only added)	55–65 (Unsanded —water only added)	115–120 (Unsanded —water only added)

*Registered Trade-Mark

PREPARED PLASTERS (SANDED)

USE—Use for scratch and brown coats.

BRANDS—Note—*See "Brands," page 19.*

Red Top Sanded Plaster.
Red Top Sanded Plaster for Brick or Tile.
Red Top Sanded Wood Fiber Plaster.

DESCRIPTION—Prepared Plasters are shipped ready to use, requiring only the addition of water. The base is Gypsum Plaster to which is added nothing but sharp, clean plastering sand, thoroughly graded and screened.

Correct proportions and mixing are accomplished by automatic machines at the factory.

CHARACTERISTICS—Prepared plasters are especially desirable in localities where good sand is difficult to obtain.

Since they are ready to apply with the addition of water only, they are particularly well adapted for use in winter when unfrozen sand of good quality is difficult or expensive to obtain.

Since these plasters may be readily mixed inside the building, they are useful for repair and remodeling work in all seasons.

DIRECTIONS—

Mixing—Add nothing but water. Hoe plaster into water, mixing thoroughly. Mix thin first, then add dry material to bring to proper consistency.

Application—Apply as specified for Cement Plasters.

PACKAGE—Shipped in full weight 100-lb. paper or jute bags.

COVERING CAPACITY—Note—*See "Covering Capacity," page 19.*

Basis—Under average conditions Gypsum Prepared Plaster mixed and applied in accordance with standard specifications will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	60 to 70	35 to 45	75 to 80	45 to 55	65 to 70
	(Plaster mixed with water only—no sand added)				

BONDCRETE* • FOR INTERIOR CONCRETE SURFACES

USE—Use for scratch and brown coats over concrete.

DESCRIPTION—Ordinary gypsum or lime plaster does not adhere properly to concrete—consequently Bondcrete, a specially made plaster for concrete surfaces, is recommended.

CHARACTERISTICS—Bondcrete permits moisture, expelled from concrete for approximately a year, to be carried through and evaporated on the surface, whereas with ordinary plaster there would be a condition approaching a sweat-out. Any plaster finish can be used over Bondcrete. Oil paint decoration should be deferred for a year.

Bondcrete Plaster adheres strongly to dry concrete because of its cementatious qualities and because it maintains a practically unchanging volume during setting and hardening.

It needs only water to make it ready for use.

Bondcrete must not be applied over smooth, oily or efflorescent surface. A semi-rough, clean surface should be provided.

Bondcrete should not be covered with a sanded brown coat on ceilings.

DIRECTIONS—

Mixing—Add nothing but water. Hoe plaster into water. Allow to soak at least 10 minutes. Mix thoroughly and break down to a smooth, even creamy consistency.

Application—Apply in two (2) coats in just sufficient thickness to obtain an even surface. Before the plaster begins to set, broom the surface to receive the finish coat.

PACKAGE—Shipped in full weight 100-lb. paper or jute bags.

COVERING CAPACITY—From 90 to 120 sq. yds. to the ton depending upon regularity of concrete surface and thickness applied.

NOTE—*See "Covering Capacity," page 19.*

RED TOP TROWEL FINISH

USE—Use for white trowel finish coat only.

DESCRIPTION—Of exceptionally fine quality is this prepared trowel finish, which works as easy and covers approximately as much surface as lime putty. The admixture of water fits it for immediate use.

Numerous field tests have convinced us that this is the ideal prepared finish.

CHARACTERISTICS—It mixes easily to a light, creamy consistency and is applied in the same manner as a putty finish. Because no slaking or soaking of lime is necessary and because the finish is mixed in the box instead of on the board, it is economical. It contains no talc, clay or other objectionable ingredient. The alkalinity of the lime content is reduced by chemical action, so that the walls may be safely decorated as soon as thoroughly dry.

Red Top Trowel Finish sets in from 1¼ to 1½ hours.

DIRECTIONS—

Mixing—Add 8 to 9 gal. of water to the 100-lb. bag. Let soak for at least 10 minutes.

Mix thoroughly. Add water if necessary to bring to a light, creamy consistency.

Application—Apply in 2 coats over dry walls. Scratch in a thin coat well ground into base, then apply second coat filling imperfections. Trowel to a smooth finish, applying water with a damp brush. Complete troweling before finish has set.

PACKAGE—Shipped in full weight 100-lb. paper bags.

COVERING CAPACITY—Coverage approximates that of lime putty and is more than any other prepared finish—450 to 500 sq. yds. per ton, according to conditions.

*Registered Trade-Mark

RED TOP TEXTURE COTE*

USE—Use as a finish plaster for texture work.

DESCRIPTION—Red Top Texture Cote was developed for texture work on new buildings. It is markedly superior to lime putty for texture work, both in working qualities and hardness. It is to be applied over gypsum brown coat properly darbied and cured for finish coat work.

CHARACTERISTICS—Red Top Texture Cote mixes easily, taking the water readily and working up easily into a material of light, creamy consistency. It seals off the suction of the base so that the texturing coat can be laid on and finished with sufficient time for the most intricate textures. It sets in from 1¾ to 2½ hours.

DIRECTIONS—

Mixing—(a) ***Neat***—Put water in box first—8 to 9 gals. of water to the 100-lb. bag. Let soak for 15 minutes. Mix thoroughly. Add water if necessary to bring to a creamy consistency. Mix only enough for one and one-half hours' use—do not retemper after material has set.

(b) ***Sand Float***—Add 1 to 3 parts of fine sand to 1 part of plaster depending on type of float finish desired. Add retarder dissolved in water to lengthen time of set, as required. Mix as in (a).

(c) ***Color***—Tinted effect may be obtained by adding Lime Proof Colors. Use extreme care to reproduce the same color in successive batches by accurate gauging of amount of color and mixing water and thorough mixing.

APPLICATION—Apply in 2 coats over half dry walls. First apply a thin coat well ground into base and allow to draw a few minutes. The second time over, lay the material on level and work it into the desired texture.

PACKAGE—Shipped in full weight 100-lb. paper bags.

COVERING CAPACITY—A coverage of 400 to 500 sq. yds. per ton is obtained depending on the type of texture used and the condition and type of base.

ORIENTAL GLAZE—Oriental Glaze is a colored glaze specially adapted for use over textured surfaces. It produces two-tone or polychrome effects, drying with a soft sheen and giving a finish that can be readily washed with a light soap solution. It may be applied to the texture cote as soon as the latter is dry. Directions are on can. Shipped in 5-gal., 1-gal., quart and similar cans down to 1/16 gal.

PREPARED GYPSUM FINISHES

USE—Use for finish coat only.

BRANDS—Note—*See "Brands," page 19.*

Trowel Finishes

Red Top Universal* White Trowel Finish.
Red Top Adamant* White Trowel Finish.
Red Top Adamant Slate Colored Trowel Finish.
Red Top Adamant IXXX Trowel Finish.
Red Top Badger* Gray Trowel Finish.

Sand Float Finishes

Red Top Silica White Sand Float Finish.
Red Top Adamant Gray Sand Float Finish.
Red Top Adamant White Sand Float Finish.
Red Top Sand Float Finish (Light Gray).

DESCRIPTION—Prepared Gypsum Finishes require only the addition of water to make them ready for use. Made of gypsum, they form a perfect and natural bond with any gypsum plaster base coat. The sand float finishes contain selected sharp clean silica sand, properly graded, screened and thoroughly dried.

CHARACTERISTICS—These finishes are ready to use when water is added, assuring a uniform mix of correct proportion. The sand float finishes are especially recommended in winter when unfrozen sand of the requisite quality is difficult to obtain. Decorations may safely be applied as soon as the finish dries out.

DIRECTIONS—

Mixing—Hoe plaster into water (using approximately 1 part of water to 2 parts of plaster measured by volume). Allow to soak for at least 10 minutes. Mix thoroughly to break down to a smooth, even, creamy consistency. Add water to bring to a very thin consistency. Transport in buckets.

Application—(a) ***Trowel Finish***—Base coat should be half green before finish is applied. Sprinkle lightly with water if suction is too great. Apply in 3 coats. Apply a thin coat well ground into surface. Allow to draw a few moments. The second time over, lay the material on level. The third time, use thin material and fill all imperfections; allow to draw a few moments; trowel to a smooth finish, applying water with a damp brush. Complete troweling before finish has set.

(b) ***Sand Float Finish***—Apply after base coat has set firm and hard, but while still green (within 12 hours after application). Lay on with a trowel, then use a float working the material to a true, even surface, free from float marks. Use as little water as possible—use damp brush only. Complete floating before finish has set.

PACKAGE—Shipped in full weight 100-lb. paper bags.

COVERING CAPACITY—Under average conditions Gypsum Trowel Finish, if mixed and applied in accordance with standard specifications, will cover about 350 to 400 yds. per ton; Gypsum Sand Float Finish about 250 to 275 yds. per ton.

ORIENTAL* INTERIOR • COLORED FINISH PLASTER

USE—Use for textured or floated plaster finish coat.

DESCRIPTION—Oriental Interior is a colored finish plaster. The material is made in thirteen standard shades and white. Tints are produced with mineral colors, great care being taken to assure absolute uniformity of shade.

Oriental Interior is ready for use with the addition of water only. It is used as a finish coat over the regular base coat of plaster and can be floated or textured.

CHARACTERISTICS—With ordinary tools, attractive, tinted, float or textured finishes may be obtained with Oriental Interior in perfect accord with modern decorating practice. Tile or stone unit effects may be produced by scoring walls before Oriental Interior has hardened.

Change of color scheme may be accomplished at any time by the application of decorative materials.

Unvarying uniformity in both color and quality is assured. The material is scientifically mixed at the mill—the addition of water only is required for immediate use. The positve regulaton of color insures walls with the minimum amount of "joinings" and avoids the danger of inaccurate mixing.

*Registered Trade-Mark

DIRECTIONS—

Mixing—Hoe material into water, using approximately 1 part of water to 2 parts of plaster, by volume. Let soak overnight. Mix thoroughly to a smooth, creamy consistency. Transport in buckets.

Application—Base coat must be set firm and hard. On masonry or tile, base must be thoroughly dry—on lathing base should be 90% dry. Wet down lightly if suction in base is too great. Use as little water as possible—use damp brush only.

(a) ***Float Finish***—Apply in 2 coats. First apply a thin coat well ground into base. The second time over, lay the material on perfectly level and float to a true, even surface, free from float marks.

(b) ***Texture Finish***—Apply in 2 coats. Base coat should be half green. First apply a thin coat well ground into base and allow to draw a few moments. The second time over, lay the material on perfectly level, working it into the desired texture. Provide proper drying condition—failure to provide protection may result in color difficulties. Tile or masonry effects may be obtained by marking off while material is green (4 to 5 hours after application).

ORIENTAL GLAZE—Oriental Glaze is a colored glaze specially adapted for use over textured surfaces. It produces two-tone or polychrome effects, drying with a soft sheen and giving a finish that can be readily washed with a light soap solution. It may be applied directly to the Oriental Interior as soon as the latter is dry. Directions are on can. Shipped in 5-gal., 1-gal., quart, and similar cans down to 1/16th gallon.

PACKAGE—Shipped only in full weight 100-lb. paper bags. Order by color name designated on color cards or samples.

COVERING CAPACITY—The covering capacity of Oriental Interior finish is approximately 250 to 300 sq. yds. per ton, varying according to textures.

GAUGING PLASTERS

USE—Use for finish coat only in conjunction with lime putty described below.

BRANDS—Note—*See "Brands," page 19.*

Slow Set
Red Top Slow Set Gauging Plaster (Gray).
Red Top Star* Gauging Plaster (White)
Red Top Superfine Finishing Plaster (White).

Quick Set
Red Top Quick Set Gauging Plaster (Gray).
Red Top Champion* Gauging Plaster (White).
Red Top Kings Diamond* Gauging Plaster (White).
Red Top NYC* Mills Gauging Plaster.

DESCRIPTION—These plasters are made of raw materials carefully selected from gypsum deposits unusually well suited for the manufacture of calcined plasters for this particular purpose.

Aside from saving time, gauging plasters are far more satisfactory than screened cement plaster.

CHARACTERISTICS—They are made in both "slow set" and "quick set," and are uniformly ground to just the right fineness to insure easy working and mixing qualities.

DIRECTIONS—Full directions for mixing and application are given under Finishing Lime.

PACKAGE—Shipped in full weight 100-lb. paper bags; 250-lb. (230 lbs. net) barrels and 320-lb. (300 lbs. net) barrels.

COVERING CAPACITY—Under average conditions one ton of Gauging Plaster, mixed with two tons of dry hydrated lime by weight, will cover about 1000 to 1400 sq. yds.

FINISHING LIME

USE—Use finishing lime for finish coat only in conjunction with gauging plaster described above.

BRANDS—Note—*See "Brands," page 19.*

Hydrated Finishing Lime
Red Top Ivory* Finish Lime.
Red Top Grand Prize* Finish Lime.
Red Top Finish Lime.
Cheshire* Hydrate. (High Calcium.)
Plastimax* Finishing Hydrate. (High Calcium.)

Finishing Quick Lime
Cheshire Finish Quick Lime—in Lump, Pulverized and Superfine.
Berkshire Hills* Finish Quick Lime—in Pulverized and Fine Grained.

DESCRIPTION—These limes are specially prepared for finishing purposes. They possess a rich plasticity that makes them spread easy and far; hence they save time and labor.

CHARACTERISTICS—Hydrated lime saves the time and trouble of slaking and screening lime on the job. The famous Ohio dolomite from which Red Top hydrated lime is made, together with USG standards of manufacture, make this lime unexcelled for finishing purposes.

It is uniformly burned and thoroughly hydrated, is of a snowy white color, and is absolutely free from "pops" and "pits."

It meets the standard specifications for hydrated lime of the American Society for Testing Materials and is accepted for United States Government construction without specific tests on the certification of the United States Gypsum Company that the lime conforms with government requirements.

Plastimax lime is a specially processed quick-soaking hydrate.

Cheshire and Berkshire Hills Quick Limes are wood burned and are of exceptional quality. Because of the exceeding purity and the physical characteristics of the stone, these limes are unusually quick slaking. They have a high putty yield.

DIRECTIONS—

Mixing—(a1) ***Hydrated Lime***—Fill watertight box one-half to two-thirds full of clean water. Add dry lime gradually (sift through a ¼-in. mesh screen, preferably) until water is dried up. Allow to soak overnight with 1 in. to 2 in. of water over lime.

(a2) ***Quick Lime***—Add water and lime gradually while mixing, constantly agitating mixture to prevent burning of unslaked portion. Mix to a thin consistency and screen. Run into ageing box.

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(b) Mix 3 parts of lime putty by measure with 1 part of dry Gauging Plaster. Mix thoroughly.

Application—Apply in 2 coats over dry walls. Scratch in a thin coat well ground into base, then apply second coat filling imperfections. Trowel to a smooth finish, applying water with a damp brush. Complete troweling before finish has set.

PACKAGE—Hydrated Finishing Lime is shipped in full weight 50-lb. paper bags. (Plastimax Finishing Hydrate in 40-lb. bags.) Quick Lime is shipped in 180-lb. and 280-lb. net weight wood barrels and steel drums, also in bulk. The Cheshire Superfine Finish Lime is shipped also in 80-lb. Multi-Wall paper moisture-proof bags.

COVERING CAPACITY—Under average conditions one ton of Red Top Hydrated Lime, when used in proportion of two parts of dry lime to one part of dry gauging plaster by weight, should finish from 500 to 700 sq. yds.

A ton of Quick Lime, when mixed in the above proportions, should finish about 1000 yards.

RED TOP KEENE'S CEMENT

USE—Use for high grade plasterwork, particularly to receive fine decorative treatment and where the utmost in hardness, density and sanitation is desired.

DESCRIPTION—Red Top Keene's Cement is the hardest and densest gypsum material that is applied with a trowel. It is manufactured from specially selected gypsum mined at Southard, Oklahoma. It excels in smooth, uniform working qualities and in tensile strength, due to the selected material and the USG improved methods of manufacture and rigid mill inspection.

Beside the standard Keene's Cement, Red Top Keene's Cement is made in two special types: Red Top Casting Keene's and Red Top Scagliola Keene's.

CHARACTERISTICS—Keene's Cement is ground to extreme fineness, is pure white in color and takes a very high, glass-like polish. Its extremely hard surface is impenetrable to rodents and vermin. It is easily cleaned. It contains no alkali to stain delicate wall tints or saponify the oil in paints, hence it is an ideal base for fine decorating.

Red Top Casting Keene's, especially adapted to high class ornamental work, has minimum expansion. It is white, non-staining, non-corrosive, non-acid. It has a final set of two hours.

Red Top Scagliola Keene's is made expressly for the purpose. Initial set is 3 to 6 hours; final set, 15 to 20 hours.

DIRECTIONS—

Mixing—For Medium Hard Finish, use 100 lbs. Keene's and 80 lbs. lime putty (40 lbs. dry lime); for Hard Finish, use 100 lbs. Keene's and 25 lbs. lime putty (one 12-qt. pail); for Extra Hard Finish, use Keene's neat.

Application—Apply in 2 coats over dry walls. Scratch in a thin coat well ground into base, then apply second coat filling imperfections. Trowel to a smooth finish, applying water with a damp brush. Complete troweling before finish has set.

PACKAGE—Shipped in 100-lb. jute and paper-lined jute sacks.

COVERING CAPACITY—Under average conditions one ton of Keene's Cement, when used neat and in accordance with specifications, will cover about 400 to 500 sq. yds.

RED TOP (ARIDIZE*) MOULDING PLASTER

USE—Use for ornamental moulded plaster work.

BRANDS—Note—*See also "Brands," page 19.*

Red Top Moulding Plaster.
Red Top No. 1 Moulding Plaster (White).

DESCRIPTION—The requirements for moulding plaster are distinctly different from any other class of plaster.

Gypsum deposits suitable for making material of this particular type are exceedingly rare.

These plasters are produced by a manufacturing process, patented by the United States Gypsum Company, which artificially ages the plaster, giving it those desirable characteristics of easy mixing and great hardness not obtainable in ordinary plasters until 8 to 12 months' ageing.

Heretofore, plasters have been aged by storing in warehouses but the results could not be uniform because of variations in temperature and humidity conditions. The production of Aridize Plasters, however, depends in no way on the atmospheric conditions, for an artificial atmosphere is produced at a temperature and humidity that will assure uniform ageing; consequently the plaster is always uniform.

Pre-ageing lowers the water carrying capacity of the plaster; hence Aridize Plasters set into denser, stronger and more durable mouldings and ornamental parts.

Even when green, moulds made of these plasters possess great strength, and breakage by handling and manipulation in the moulding and casting stage is diminished.

CHARACTERISTICS—Aridize Moulding Plasters are made from selected gypsum ideal for the purpose and unequaled for whiteness and purity. This, together with the special patented process of manufacture, produces a particularly smooth working plaster of absolutely uniform setting quality.

These plasters are ground much finer than other similar products, assuring a more thorough solution and a finer surface to the finished work, with an absence of pinholes. The fine satin-like surface increases the life of the moulds.

In addition to these qualities, the plasters are cooler working and slower setting, which accounts for low expansion and absence of warped moulds. The slow generation of heat in setting insures protection to gelatine or glue moulds. Slow setting gives time for blending and working out trapped air bubbles and working the plaster into angles and corners of moulds.

DIRECTIONS—Add water only, mix thoroughly and bring to a working consistency. Add 5% lime, putty to the moulding plaster where extra plasticity is required for run work.

PACKAGE—Shipped in 100-lb. paper bags; 250-lb. (230 lbs. net weight) barrels and in 320-lb. (300 lbs. net weight) barrels.

*Registered Trade-Mark

Master Specifications

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INTERIOR LATHING and PLASTERING

PREFACE

SPECIFICATION FORM—The form of this specification is that of a "Master" which includes all clauses which in ordinary practice apply to average work. All clauses, obviously, do not apply to every building. In formulating the "Interior Lathing and Plastering Specifications" for a particular building, only those clauses which apply should be selected for inclusion. Special provisions or methods but seldom required are not included—such clauses should be added wherever necessary to clearly define the procedure and especially to obviate controversy involving responsibility and cost.

LOCAL ORDINANCES—Correlate these specifications with the requirements of Local Ordinances and Trade Customs relating to this division of the work.

ALTERATIONS and ADDITIONS — These specifications cover new work only. For additions and alterations add such clauses covering repairs and replacements and the joining of old and new work as may be required.

ADVISORY SERVICE — The technical staff of the United States Gypsum Company is at all times accessible for advice and recommendations in the formulating of the specification for Interior Lathing and Plastering. Special data, the result of much extended research work, relating to the selection and application of Interior Plastering and "Explanations of Job Conditions which Affect Plastering" will be furnished on request.

NOTES—Notes in italics are explanatory or advisory only and should not be included in the specification.

SELECTIVE WORDS or PHRASES—Wherever words or phrases occur in the body of the specification paragraph printed in bold face type and enclosed in brackets, choose that word or phrase which applies to the particular work, omitting those that are irrelevant. Wherever the word "specify" occurs enclosed in brackets, thus **[specify],** add the particular word or clause applicable, optional with the specification writer.

(A) GENERAL PROVISIONS

NOTE—*For complete plastering systems see USG Resilient Plastering Systems and Standard X Plastering System, pages 11 to 17 inclusive.*

NOTE—*For Sabinite Acoustical Plaster, see the* United States Gypsum Company's *complete section covering "Sound Control Service."*

NOTE—*For "Master Specifications" for "Red Top Insulating Lath" see the* United States Gypsum Company's *complete section covering "Thermal Insulation."*

(A1) GENERAL CONDITIONS

The general conditions governing the General Contract apply to the work under this division.

NOTE—*The American Institute of Architects' Standard forms of General Conditions is advocated.*

(A2) WORK INCLUDED

(A2a) The work included under this heading shall be the following:

(A2b) All metal suspended or furred ceilings.

(A2c) All metal stud partitions.

(A2d) All metal wall furring.

(A2e) All miscellaneous metal furring.

(A2f) All lathing.

(A2g) All plastering.

(A3) GENERAL SCOPE

NOTE—*List and locate either in schedules on plans or here portions of the building to be finished, the base to receive plaster and here include sufficient data to insure accuracy in estimates.*

(A3a) The following require no plaster **[list and locate].**

(A3b) The following require but **[one (1)] [two (2)]** coats of plaster **[list and locate].**

(A3c) Ceilings noted as furred **[on plans] [in schedules]** are furred with **[metal] [gypsum board] [wood].**

(A3d) All supports for lath are spaced 16 in. on centers.

(A3e) All exterior walls are furred with **[specify].**

(A3f) Exterior walls are not furred. Plaster shall be applied directly on the **[specify].**

(A3g) Partitions are of **[specify].**

(A3h) Walls back of finished tile work shall be lathed only. No plaster shall be applied.

(A3i) Omit all plaster on interior masonry walls and **[hollow tile] [Pyrobar]** partitions back of marble work.

(A3j) All exterior masonry walls, not furred, shall receive one coat of plaster back of marble work.

(A3k) Omit the finish coat of plaster on all stud walls back of **[marble work] [blackboards] [specify].**

(A3l) Omitt the finish coat of plaster back of all **[wood wainscots] [specify]** and similar solid trim.

(A3m) **[Specify]** shafts shall be plastered full height.

[A3n) All chases in unfurred masonry walls which are to be plastered shall be lathed with metal lath. Lap the masonry at least 3 in. and secure at masonry joints. Wide chases (over 16 in.) shall be furred to receive lath.

(A4) SCAFFOLDING

(A4a) This contractor shall provide and erect all scaffolding, staging, etc., necessary for the proper execution of his work.

(A4b) He shall co-operate with other trades to the extent that erection of scaffolding shall not conflict with the execution of other work immediately preceding or carried on, without undue conflict, simultaneously with the lathing and plastering.

(A4c) If, after due authority has been granted to erect scaffolding, it is necessary to remove parts thereof for the accommodation of others, demolition and re-erection shall be done only after allocation of cost has been equitably adjusted.

(A5) HEAT and VENTILATION

(A5a) Adequate temporary heat and ventilation will be provided by others for the proper execution of work under this contract.

(A5b) This contractor shall provide salamanders, fuel and attendance and shall maintain without fire hazard adequate heat and ventilation for the proper execution of work under this contract.

(A6) CLOSURES

(A6a) Provide temporary cloth closures for all exterior openings during plastering.

(A6b) During the summer months exterior openings shall be screened to prevent plastering drying out before it has set.

(A7) PROTECTION

(A7a) Adequately protect from damage and plaster droppings all finish of the building.

(A7b) Adequately protect the building with layers of heavy waterproof paper from damage by water at sources, gauging barrels and mixing boxes.

(A8) DAMAGE

Breakage of glass or other damage to the building or equipment through accident or carelessness incident to work under this contract shall be satisfactorily repaired or made good by replacement at this contractor's expense.

(A9) CLEANING

(A9a) At completion, remove all rubbish, plaster droppings, etc., and leave the building broom clean.

(A9b) This contractor shall remove all plaster from glass and other finish and leave in the condition found.

(A10) CUTTING and PATCHING

After the erection of finish by others, this contractor shall, when called upon, cut out where required, patch and point up all finished plaster work and leave the entire work in perfect condition.

(A11) SAMPLE PANELS

This contractor shall furnish and erect, where directed for the approval of the architect, sample panels of one square yard area each, to illustrate each type of finish required under this contract. The finished work shall equal in all respects the approved panels.

(A12) CONCRETE SURFACES

NOTE—*Concrete surfaces to receive plaster must not be smooth. Use rough form boards. Avoid dressed or oiled boards.*

(A12a) Concrete surfaces must be dry and free from dust, oils and efflorescence.

(A12b) Burn off all oil or grease from surface with a torch.

(A12c) Remove efflorescence with a wire brush and wash with a one (1) to five (5) solution of muriatic acid and water. Thoroughly wash off acid with clean water.

(A12d) Surfaces too smooth to receive plaster shall be thoroughly hacked.

(A12e) Hacking will be done by others.

(A13) GROUNDS

All lathing and plastering shall be laid to not less than the following grounds:

¾ in. for **[¼ in. gypsum lath] [wood lath] [expanded metal lath] [⅞ in. for ⅜ in. gypsum lath]; [1 in. for ½ in. insulating board lath];** ⅝ in. for **[brick] [or] [clay tile] [½ in. for Pyrobar].**

(A14) GUARANTY

(A14a) This contractor shall guarantee all work and materials under this contract for a period of **[specify]** from the date of completion and acceptance.

(A14b) Any defects attributable to faulty workmanship or material furnished under this contract shall be made good at this contractor's expense.

(A14c) This shall include the cost of repairs or replacement of any decorating or other finish damaged by the defects.

(A15) WORKMANSHIP

All work shall be executed by skilled workmen in a manner to satisfactorily fulfill the provisions of these specifications.

(A16) EXAMINATION

(A16a) All construction to receive lathing and plastering is presumed to be substantial, sound, level, plumb and true.

(A16b) This contractor shall examine all construction, supports and base to receive lathing and plastering and shall report to the architect in writing any defects which will deleteriously affect work under this contract.

(A16c) Failure to so report defects for correction or replacement prior to execution of the work under this contract will be construed as acceptance of the construction and shall not relieve the contractor from obligation under his guaranty.

(B) METAL FURRING · METAL STUD PARTITIONS

(B1) MATERIALS

NOTE—*See page 9.*

(B1a) Metal Furring—[Specify sizes] Red Top Cold Rolled Channels.

NOTE—*USG Red Top Inner Wall Furring Brackets, installed by the masonry contractor, prove for deep furring an economical and practical substitution for metal furring.*

(B1b) METAL PARTITION STUDS—[Specify sizes] Red Top Cold Rolled Channels.

(B2) FURRED or SUSPENDED CEILINGS

NOTE—*See "Standard X Suspended Ceilings," page 17.*

(B2a) GENERAL—Where so indicated on plans **[or listed in schedules]** ceilings shall be furred or suspended with metal furring members.

(B2b) HANGERS—Hangers shall be placed not to exceed 4 ft. center to center in either direction. The minimum size for hangers shall be No. 8 galvanized wire, 1 x 3/16-in. flats or 7/32-in. round mild steel rods.

Upper ends of hangers of wire, rods, or flats, shall be of sufficent length to wrap around beams or provide a suitable anchorage in the concrete or tile. Where steel beams or purlins are not more than 4 ft. center to center, hangers may be attached directly to them. When hangers are hung from concrete beams or arches, the hangers shall be placed before concrete is poured. When ceilings are hung from terra cotta floors, hangers may be installed at tile joints during erection, or may be installed after tile is in place, holes bored clear through tile and secured on upper side by steel rod or toggle bolt.

(B2c) RUNNER CHANNELS—Runner Channels shall be placed not to exceed 4 ft. on centers, and shall be not less than 1½ in. weighing not less than 456 lbs. per thousand lineal feet. Lower end of wire hangers shall be secured to runner channels by three twists; lower end of rod hangers shall be secured to runner channels by two twists, or by wiring; lower end of flat steel hangers shall have holes punched at the proper distance to which the runner channels shall be bolted with not less than ⅜-in. diameter bolts.

Runner channels shall conform to the contour of the ceiling.

(B2d) FURRING CHANNELS—Furring Channels, spaced **[specify]** shall not be less than ¾ in. with a minimum weight of 276 lbs. per thousand lineal ft.; they shall be erected at right angles to the runner channels and shall be securely saddle tied to them by at least three strands of No. 16 galvanized annealed wire at each crossing, or by No. 9 wire hairpin clips.

NOTE—*Maximum spacing should be 12 and 13½ in. for 3.0 and 3.4 lb. flat lath; 12 in. for 2.75 lb.; 16 in. for 3.0 lb.; 19 in. for 3.4 lb. ⅛ in. Flat Rib Lath; 16 in. for 2.05 lb.; 24 in. for 3.0 lb.; 31½ in. for 3.4 lb. or 4.0 lb. ⅜ in. Rib Lath.*

(B3) METAL STUD PARTITIONS

(B3a) SOLID PARTITIONS—Metal studs for solid partitions shall be not less than ¾-in. cold or hot rolled channels weighing not less than 276 lbs. per thousand lineal feet, and spacing of studs shall conform with the requirements for the weight of lath specified.

(B3b) HOLLOW PARTITIONS—Metal studs for hollow partitions shall be constructed of a double row of ¾-in. channels weighing not less than 276 lbs. per thousand lineal feet and spacing of studs shall conform with the requirements for the weight of lath specified.

(B3c) GENERAL—

(B3c1) Studs shall be secured in position by inserting ends in holes punched ¾ in. in top of concrete or other masonry floors or in soffits of masonry ceilings, or by attaching to stud shoes, or by placing ends in holes drilled in wood floor bucks anchored to masonry floors at 4-ft. intervals.

(B3c2) Studs shall be secured on wood floors by wire tying to nails driven 1 in. into floors and projecting at least 1 in. above.

(B3c3) Where metal lath ceilings are used a small hole shall be made in the ceiling lath and the end of the channel allowed to project through it and be wired to a channel attached to the ceiling lath.

(B3c4) Splicing of studs shall be made by lapping channels not less than 8 in. with the flanges interlocked and tied.

(B3c5) Solid partitions over 6 ft. high shall be temporarily braced horizontally on the channel side at intervals not exceeding 6 ft. vertically before applying plaster. Such bracing shall not be removed until scratch coat on the lath side of the partition has set.

(B3c6) In every case one channel shall be set next to wood buck at each side of openings and double wired securely to 8d nails driven on each side of channel in pairs into buck at 2-ft. intervals. Bottom of door buck shall be securely spiked to wood plug in floor, or attached by metal anchors.

(B4) METAL WALL FURRING

Where so indicated on plans **[or listed in schedules]** exterior walls shall be furred with ¾-in. channels spaced **[specify]** on centers with flange to wall. Furring channels shall be substantially secured to floors and ceilings and shall be substantially secured to walls with special hook nails driven into the mortar joints. Provide rigid framing at all openings.

(B5) MISCELLANEOUS METAL FURRING

Provide ¾-in. channel furring for all **[false beams] [ornamental plaster cornices] [stair soffits] [specify],** etc., as shown on the plans and as detailed. Furring shall be set **[specify]** o.c. and rigidly secured to the building construction.

(C) LATHING

(C1) MATERIALS

(C1a) WOOD LATH—No. 1 **[white pine] [cypress] [spruce]** free from knots, sap and bark.

(C1b) GYPSUM LATH—[Perforated] Rocklath ⅜ in. thick, 16 x 32 in. and 16 x 48 in.

NOTE—*For Rocklath, see page 2.*

(C1c) INSULATING LATH—Red Top Insulating Lath **[½ in.] [1 in.]** thick, 18 x 48 in.

NOTE—*See USG Co.'s "Thermal Insulation" section for complete details and specifications.*

(C1d) METAL LATH—[Specify brand, material and finish] lath; —— lb. for horizontal positions and —— lb. for vertical positions.

NOTE—*See pages 4, 5 and 6. Select and specify weight for both horizontal and vertical positions.*

NOTE—*Minimum weights should be as follows:*

(a) Expanded Metal Lath—

(a1) ***(For vertical positions, partitions, etc., attached to metal supports)*** *12 and 13½-in. on center, lath shall weigh a minimum of 2.5 and 3.0 lbs., respectively except for solid partitions where 2.2 lath may be used on 12 in. spacings; and 3.4 lath on 16 in. spacing. For nailed-on partitions, maximum spacing shall be 16 in. for all flat laths, minimum weight to be 2.5 lb.*

(a2) *(For tied-on ceilings attached to metal supports) maximum spacing shall be 12 and 13½ in. for 3.0 and 3.4 lb. flat lath; for nailed-on ceilings maximum spacing shall be 16 in. for these laths.*

(b) ⅛ in. Flat Rib Lath—

(b1) ***(For nailed or tied-on partitions and furring)***
For supports spaced not to exceed 16 in. o.c. .....2.75 lb.
For supports spaced not to exceed 19 in. o.c. .....3.0 lb.

(b2) ***(For nailed or tied-on ceilings)***
For supports spaced not to exceed 12 in. o.c.....2.75 lb.
For supports spaced not to exceed 16 in. o.c.....3.0 lb.
For supports spaced not to exceed 19 in. o.c.....3.4 lb.

(c) ⅜ in. Rib Lath—

(c1) ***(For nailed or tied-on partitions and furring)***
For supports spaced not to exceed 19 in. o.c.....2.5 lb.
For supports spaced not to exceed 24 in. o.c.....3.0 lb.
For supports spaced not to exceed 31½ in. o.c.....3.4 lb.

(c2) ***(For nailed or tied-on ceilings)***
For supports spaced not to exceed 19 in. o.c.....3.0 lb.
For supports spaced not to exceed 24 in. c.o.....3.4 lb.
For supports spaced not to exceed 31½ in. o.c.....4.0 lb.

(C1e) CORNERITE—Red Top Cornerite, 3 x 3 x 96 in. with special selvage edge.

(C2) APPLICATION of WOOD LATH

(C2a) All **[exterior stud walls] [wood furring] [interior stud partitions] [ceiling joists] [stair soffits] [specify]** shall be lathed with wood lath. Lath shall be spaced not less than ¼ in. nor more than ⅜ in. apart and shall be secured to each bearing with standard wood shingle nails, two (2) to each end and one (1) to intermediate bearings.

Lathing shall break joints every eight laths, all put on horizontally. Under no circumstances shall lathing stop and form a long, straight, vertical joint nor be put on vertically to finish out at angles or corners; neither shall any lath run through and behind studding from one room to another. All corners must be made solid before lath is applied.

(C2b) All re-entrant angles shall be reinforced over the wood lath with Cornerite. Strips shall butt (not lap) at ends and shall be substantially secured.

(C3) APPLICATION of ROCKLATH

All **[exterior stud walls] [wood furring] [interior stud partitions] [ceiling joists] [stair soffits] [furred or suspended ceiling] [specify]** shall be lathed with Rocklath.

(C3a) Cutting shall be done by scoring with a sharp hatchet or knife and then breaking down and up over a straight edge.

Nails shall be 1⅛ in., 13 gauge, blued, 5/16 in. flat head, smooth diamond point.

Rocklath boards shall butt with broken joints in each course. Stagger joints between walls and ceilings so the vertical joints on wall will not meet ceiling joints.

Fit Rocklath tight together at all re-entrant angles and corners. Cut accurately and fit Rocklath neatly around all electric outlet boxes, etc.

Space nails approximately 4 in. apart using 5 nails per stud. First nail ½ in. from edge, nailing to center support first, then outer edges. Each nailing edge must have a firm bearing on studs, joists and furring. Drive nails home.

(C3b) All re-entrant angles shall be reinforced over the Rocklath with Cornerite. Strips shall butt (not lap) at ends and shall be substantially secured.

(C4) APPLICATION of INSULATING LATH

NOTE—*See USG section on "Thermal Insulation" for complete specification data.*

(C5) APPLICATION OF METAL LATH

(C5a) GENERAL—All **[specify location]** shall be lathed with metal lath.

(C5b) ATTACHMENT TO WOOD SUPPORTS—Metal lath shall be attached to wood studs and joists by not less than 4d and 6d nails, respectively, driven to a penetration of not less than ⅞ in. and 1 in., respectively and spaced not to exceed 6 in. o.c. or by clips or devices with equivalent penetration and holding power. There shall be one tie on side laps, half way between supports.

(C5c) ATTACHMENT TO METAL SUPPORTS—Metal lath shall be wired to metal supports at intervals not exceeding 6 in., with not less than No. 18 gauge galvanized soft annealed wire and tie shall always occur where sides of sheets lap at channels. There shall be one tie on side laps half way between channels.

(C5d) ERECTION OF METAL LATH—

(C5d1) Metal lath shall be erected with the long dimensions of sheet across the supports.

(C5d2) Lath shall be first applied to the ceilings and the sheets carried down 6 in. onto the walls and partitions. If metal lath is not used on the ceilings, the lathing shall start at the top of the wall and be bent and carried up 6 in. onto the ceiling joists so that no joints occur at juncture of ceiling and walls; and on walls, all lath shall be started one framing member away from corner and bent into the corner and carried onto the abutting wall so as to avoid a joint at juncture of walls. Where ⅜-in. ribbed lath is used on ceilings or walls it shall be butted into all joints, and strips of flat lath shall be bent into the shape of an "L", 3 in. on each side, and securely wired along each edge in all corners. Strips shall not be fastened at the corner, but only along each edge of the sheet.

(C5d3) Lath shall be placed so that the lower sheet laps over the upper (not vice versa) and shall be securely attached to the supports. Fastenings shall be so placed that they shall occur where sides of sheets lap at supports.

(C5d4) Expanded metal lath shall be lapped at sides not less than ½ in. and at ends not less than 1 in. End laps shall occur only over supports.

(C5d5) Rib lath shall be lapped at sides by nesting outside ribs, and at ends, 1 in.

(D) PLASTERING ACCESSORIES

(D1) MATERIALS

(D1a) METAL PLASTER ARCHES—Red Top Metal Plaster Arches No. **[s] [specify].**

NOTE—*See page 8.*

(D1b) CORNER BEADS—Red Top Corner Bead No. **[specify].**

(D1c) BASE SCREEDS—Red Top Base Screed No. **[specify].**

(D1d) METAL PICTURE MOULD—Red Top Picture Mould No. **[specify].**

(D1e) METAL EXPANSION CASING—[specify].

(D2) APPLICATION of METAL PLASTER ARCHES

Secure metal plaster arches in position over the lath, set accurately in accordance with the details. Corner beads on vertical jambs shall join arch beads without break at the juncture.

(D3) APPLICATION of CORNER BEADS

All corners **[both vertical and horizontal]** shall be protected with corner beads for their full height **[or length].**

NOTE—*If there are exceptions, so note.*

Corner beads shall be rigidly and substantially secured, accurately set, plumb, true and straight.

(D4) APPLICATION of METAL BASE SCREEDS

The following rooms shall have base screeds:

NOTE—*List and locate here or in schedules on plans.*

Screeds shall be substantially secured, accurately set, straight and true to line and parallel with the finished floor line.

(D5) APPLICATION of METAL PICTURE MOULDS

The following rooms shall have metal picure moulds:

NOTE—*List and locate here or in schedules on plans.*

Picture moulds shall be substantially secured, accurately set, straight and true to line and parallel with the ceiling line.

(D6) APPLICATION of METAL EXPANSION CASINGS

The following openings shall have metal expansion casings:

NOTE—*List and locate here or in schedules on plans.*

Expansion casings shall be accurately set in line with jambs. Secure with screws, locking clips and stamped casing miters.

(E) PLASTERING · BASE COATS
(Scratch and Brown Coats)

(E1) MATERIALS and MIXING

NOTE—*See pages 20 and 21.*

NOTE—*Select type best adapted.*

(E1a) GENERAL—Store all plaster at the site in a dry place, raised above the bare ground.

Provide clean, water-tight mixing boxes (approximately 3½ x 7 ft. x 10 in. deep for base coats and 2½ x 4½ ft. x 10 in. deep for finish coats) raised 4 in. at one end. Clean mixing boxes after each gauging. Machine mixing is permitted providing machine is kept clean and free from set plaster.

Keep tools clean. Do not rinse tools in gauging water.

Do not mix more material than can be applied in approximately one (1) hour nor one gauging with another. Never retemper plaster after it has commenced to set.

All material except sand shall be as manufactured by the United States Gypsum Company.

(E1b) WATER—Water shall be clean and free from impurities.

(E1c) SAND—Sand shall be clean, sharp and free from organic matter with grains graded from fine to coarse, meeting the Standard Specifications for Plastering Sand of the American Society for Testing Materials. Screen through a 6-mesh screen.

(E1d) (Specify brand) CEMENT PLASTER (UNSANDED)—

(E1d1) For scratch coat on gypsum lath, wood, wire and expanded metal lath, mix 2 parts by weight of dry sand with 1 part of plaster.

(E1d2) For scratch coat on brick, Pyrobar gypsum tile, clay tile and for second or brown coat, mix 3 parts by weight of dry sand with 1 part of plaster.

(E1d3) Do not mix sand and plaster until ready to add water.

(E1d4) First put in raised end of the mixing box a layer of sand, then one of plaster. Hoe dry from one end of box to other and then back again, working sand and plaster thoroughly together to a uniform color. Put water in other end of box; hoe plaster into the water, mixing thoroughly. Mix thin at first, then bring to the proper consistency for application by addition of properly proportioned dry sand and plaster.

(E1e) (Specify brand) WOOD FIBER PLASTER—

(E1e1) Neat—Put the plaster in upper end of mixing box and water in lower end. Hoe plaster into water and allow to soak from 10 to 20 minutes. Then mix to proper consistency.

NOTE—*Used for wood lath and gypsum lath and scratch coat on wire and metal expanded lath.*

(E1e2) Sanded—Mix equal parts by weight of plaster and dry sand. Mix as specified above in (E1e1).

NOTE—*Used for brown coat on wire and expanded metal lath and for all plaster on brick, gypsum or clay tile.*

(E1f) (Specify brand) PREPARED PLASTER (SANDED)—

(E1f1) Add nothing to the material but water.

(E1f2) Put the plaster in upper end of mixing box and water in lower end. Hoe plaster into water, mixing thoroughly. Mix thin at first, then add sufficient dry material to bring to the proper consistency for application.

(E1g) BONDCRETE (FOR ALL CONCRETE SURFACES)—

(E1g1) For both scratch and brown coats.

(E1g2) Add nothing to the material but water.

(E1g3) Put the plaster in the upper end of mixing box and water in lower end. Hoe plaster into water. Allow the material to soak at least 10 minutes. Mix thoroughly and break down the mix to a smooth, even, creamy consistency.

(E2) APPLICATION of PLASTER—GENERAL

Keep plaster from freezing for 24 hours after application.

Do not apply finish coat on a base coat which contains frost.

In hot, dry weather screen all openings while plastering to prevent material from drying out before it has set. If plaster should dry out (showing soft, white spots or areas) sprinkle those portions so affected with clean water from a spray pump or a brush.

After plastering has set, open the windows and permit the wall to dry out as quickly as possible. Use judgment in procedure during freezing weather.

For grounds see "Grounds," par. (A13), page 26. Unless specially otherwise noted, all plaster shall be applied in three (3) coats—scratch, brown and finish. Scratch coat shall be applied and the surface well scratched. When scratch coat is set and nearly dry, follow with brown coat. Brown coat shall be brought to a true level plane with rod and darby flush with the grounds, ready to receive finish coat. Angles and corners shall be left straight, true and plumb.

(E3) APPLICATION • Cement and Prepared Plasters

(E3a) ON WOOD LATH—Soak lath thoroughly the day before and again an hour or so before applying the plaster. Apply in two (2) coats, scratch and brown, the scratch with sufficient pressure to obtain a good key. Darby the brown coat lightly, and use water sparingly.

(E3b) ON GYPSUM LATH—Do not wet lath. Apply in two (2) coats, scratch and brown. Scratch coat shall be well scratched in to fill all interstices between lath boards. Darby brown coat lightly and use water sparingly.

(E3c) ON WIRE OR EXPANDED METAL LATH—Apply in two (2) coats, scratch and brown. Scratch coat shall be applied lightly covering the lath and filling meshes. Scratch first coat and allow to set before applying brown coat. Darby brown coat lightly and use water sparingly.

(E3d) ON BRICK, PYROBAR GYPSUM TILE, OR CLAY TILE—[Soak brick or tile wall thoroughly.] [If necessary, sprinkle Pyrobar lightly to reduce suction.] Apply in two (2) coats, scratch and brown, and fill out to grounds. Darby lightly and use water sparingly.

(E4) APPLICATION • Wood Fiber Plaster

NOTE—*Neat Wood Fiber Plaster may be troweled down to a smooth finish omitting further finish coat.*

(E4a) ON WOOD LATH—Soak lath thoroughly the day before and again an hour or so before applying the plaster. Apply scratch coat with sufficient pressure to obtain a good key. Rake or scratch the surface. Apply brown coat using sufficient material to fill out to the grounds.

Before the plaster begins to set, broom the surface to receive the finish coat.

(E4b) ON GYPSUM LATH—Do not wet lath. Apply in two (2) coats, scratch and brown. Scratch coat shall be well scratched in to fill joint between lath units. Before the plaster begins to set, broom surface to receive finish coat.

(E4c) ON WIRE OR EXPANDED METAL LATH—Apply in two (2) coats, scratch and brown. Scratch coat shall be applied a little stiff, covering the lath and filling meshes. Scratch first coat and allow to set before applying brown coat. Brown coat shall be applied to fill out to the grounds. Before the plaster begins to set, broom the surface to receive the finish coat.

(E4d) ON BRICK, PYROBAR GYPSUM TILE, OR CLAY TILE—[Except over dampproof paint.] [Soak brick or tile walls thoroughly.] [If necessary, sprinkle Pyrobar lightly to reduce suction.] Apply in two (2) coats, scratch and brown, and fill out to the grounds. Before the plaster begins to set, broom the surface to receive the finish coat.

(E5) APPLICATION • Bondcrete for Concrete

NOTE—*See paragraph (A12), page 26.*

NOTE—*Bondcrete may be troweled down to a smooth finish omitting further finish coat. If desired, so specify.*

(E5a) Apply in two (2) coats, scratch and brown, and fill out to grounds. Before the plaster begins to set, broom the surface to receive the finish coat.

NOTE—*Use for all large areas of concrete.*

(E5b) Apply Bondcrete scratch coat only on girders and beams (under 24 in.) in concrete joist and clay tile floor construction. Leave the surface well scratched and roughened. Over this scratch coat apply a brown coat of sanded cement plaster brooming coat used for scratch and brown coat on tile surfaces.

(F) PLASTERING • FINISH COATS

(F1) MATERIALS and MIXING

NOTE—*Select type best adapted.*

(F1a) GENERAL—Store all plaster at the site in a dry place, raised above the bare ground.

Provide clean, water-tight mixing boxes (approximately 3½ x 7 ft. x 10 in. deep for base coats and 2½ x 4½ ft. x 10 in. deep for finish coats) raised 4 in. at one end. Clean mixing boxes after each gauging. Machine mixing is permitted providing machine is kept clean and free from set plaster.

Keep tools clean. Do not rinse tools in gauging water.

Do not mix more material than can be applied in approximately one (1) hour nor one gauging with another. Never retemper plaster after it has commenced to set.

All material except sand for job sanded sand float finish shall be as manufactured by the United States Gypsum Company.

(F1b) WATER—Water shall be clean, free from alkali and impurities.

(F1c) SAND—Sand shall be clean, sharp and free from organic matter with grains graded from fine to coarse, meeting the Standard Specifications for Plastering Sand of the American Society for Testing Materials. Screen through a 6-mesh screen.

(F1d) RED TOP TROWEL FINISH—

NOTE—*See page 21.*

Put the finish in the upper end of mixing box and water in the lower end (8 gals. to the 100-lb. bag). No soaking is necessary. Mix thoroughly. Add more water if necessary to bring to a light, creamy consistency.

(F1e) (Specify brand) PREPARED GYPSUM FINISH—

NOTE—*See page 22.*

Put the finish in the upper end of mixing box and water in lower end. Hoe plaster into water (using approximately 1 part of water to 2 parts of plaster measured by volume). Allow the material to soak and draw in the water without hoeing for at least 20 minutes. When the material has soaked and shows no further signs of air bubbles, mix thoroughly and, with particular care, break down the mix to a smooth, even, creamy consistency. Bring the mix finally to a very thin consistency. Transport in buckets.

(F1f) (Specify brand) FINISHING LIME and (Specify brand) GAUGING PLASTER—

NOTE—*See pages 23 and 24.*

(F1f1) ***(Hydrated Lime)*** Fill water-tight box one-half to two-thirds full of clean water. Add dry lime gradually, preferably sifting through a ¼-in. mesh screen, until all water is dried up. Allow lime to soak overnight to develop full plasticity. Do not hoe or screen after soaking unless lime is dirty or lumpy.

(F1f2) ***(Quick Lime)*** Add water and lime gradually while mixing, constantly agitating the mixture to prevent burning of the unslaked portion. Mix to a thin consistency and screen. Run into ageing box.

(F1f3) Mix 3 parts of lime putty by measure with 1 part of dry Gauging Plaster (equal to 2 parts of dry hydrated lime and 1 part of dry gauging plaster by weight). Mix thoroughly.

(F1g) (Specify brand) PREPARED GYPSUM SAND FLOAT FINISH—

NOTE—*See page 22.*

Put the finish in the upper end of mixing box and water in lower end. Hoe finish into water. Allow the material to soak and draw in the water without hoeing for at least 10 minutes. When the material has soaked and shows no further signs of air bubbles, mix thoroughly and, with particular care, break down the mix to a smooth, even, creamy consistency. Transport in buckets.

(F1h) (Specify brand) SAND FLOAT FINISH (JOB SANDED)—

NOTE—*See page 20.*

Screen sand through a No. 12 screen. Mix dry to a uniform color 1 part of Cement Plaster to 1 part of dry sand by weight (equal to from 4 to 6 shovels of sand to each 100-lb. bag). Put dry mix in upper end of box and water in lower end. Hoe material into water and mix thoroughly to a smooth, creamy consistency. Transport in buckets. Keep tools and box clean.

(F1i) RED TOP TEXTURE COTE—

NOTE—*See page 22.*

(F1i1) ***Neat***—Put water in box first—8 to 9 gals. of water to the 100-lb. bag. Let soak for 15 minutes. Mix thoroughly. Add water if necessary to bring to a creamy consistency. Mix only enough for 1 hour's use—do not retemper after material has set.

(F1i2) ***Sand Float***—Add 1 to 3 parts of fine sand to 1 part of plaster. Add retarder dissolved in water to lengthen time of set, if required. Mix as above in (F1i1).

(F1i3) ***Color***—Tint to shade selected with USG Lime Proof Colors. Use extreme care to reproduce the same color in successive batches by accurate gauging of amount of color and mixing water and thorough mixing.

(F1j) ORIENTAL INTERIOR (COLORED FLOAT OR TEXTURE FINISH—

NOTE—*See pages 22 and 23.*

(F1j1) Color **[s]** shall be **[specify]** as subsequently determined upon.

(F1j2) Put the Oriental Interior in upper end of box and water in lower end. Hoe material into water, using approximately 1 part water to 2 parts Oriental Interior, by volume. Let Oriental Interior soak overnight. After soaking, mix thoroughly and carefully hoe the mix to a smooth, creamy consistency. Transport in buckets.

(F1k) RED TOP KEENE'S CEMENT—

NOTE—*See page 24. Clauses below are for finish coats only.*

(F1k1) Add water only, mix thoroughly and bring to a working consistency.

(F1k2) Add **[80 lbs. lime putty] [25 lbs. lime putty] [specify]** to each 100-lb. bag of Keene's Cement, or use Keene's Cement without lime.

(F2) APPLICATION OF FINISH COAT • GENERAL

Keep plaster from freezing for 24 hours after application.

Do not apply finish coat on a base coat which contains frost.

In hot, dry weather screen all openings while plastering to prevent material drying out before it has set. If plaster should dry out (showing soft, white spots) sprinkle portions so affected with clean water with a spray pump or brush.

After plastering has set, open the windows and permit the wall to dry out as quickly as possible. Use judgment in procedure during freezing weather.

Angles and corners shall be left, straight, true and plumb.

(F3) APPLICATION • Trowel Finish

(F3a) LOCATION—The following shall receive trowel finish:

NOTE—*List and locate either in schedules on plans or here.*

(F3b) RED TOP TROWEL FINISH OR LIME AND GAUGING PLASTER—

Apply over *dry* walls, using more water if the walls are bone dry. Scratch in a thin coat, then go over a second time filling imperfections and cat faces. Trowel to a smooth finish applying water with a damp brush. Troweling should be completed before the finish has set. In cold, damp weather, provide heat and ventilation until the finish is dry.

(F3c) PREPARED GYPSUM FINISH—

Base coat must be half green before finish is applied. If suction is too great, sprinkle lightly with clean water from a clean brush.

Apply in three (3) coats. The first time over, put on sufficient material to cover the surface completely, using material as thin as possible and grinding it thoroughly into the base coat. Allow this to draw a few moments to avoid blistering.

The second time over, lay the material on perfectly level.

The third time make the material as thin as can be handled on the hawk and fill in cat faces and imperfections. After it has drawn a few moments, trowel to a smooth surface, applying water with a damp brush. Do not drench with water (drenching will kill the face of the material). Work top and bottom of the wall at the same time to avoid joinings.

(F4) APPLICATION • Sand Float Finish

(F4a) LOCATION—The following shall receive sand float finish:

NOTE—*List and locate either in schedules on plans or here.*

(F4b) PREPARED SAND FLOAT FINISH OR CEMENT PLASTER SANDED—

Apply sand float finish after base coat has set firm and hard, but while still green.

"Grind in" a thin coat first; then "come back" with the final coat, laying it on in an even surface. Then use a **[cork] [carpet]** or **[felt]** float, working the material to a true, even surface, free from float marks and cat faces.

NOTE—*Cork float preferred.*

Use as little water as possible while working, so as to avoid killing the surface. Use damp brush only. Do not attempt to work after the material begins to or has set.

Work top and bottom of the wall at the same time to avoid joinings.

(F5) APPLICATION • Oriental Interior (Colored Finish Coat)

(F5a) LOCATION—The following shall receive Oriental Interior Finish:

NOTE—*List and locate either in schedules on plans or here.*

(F5b) GENERAL—Brown coat should be broomed or left rough under darby to insure a good bond. Remove all loose or projecting particles from base coat which may show through finish coat.

The base coat must be set firm and hard before the application of Oriental Interior. On all types of masonry construction, such as gypsum tile, clay tile, etc., the base coat must be thoroughly dry. On other types of lathing base, such as plaster board, wood or metal lath, Oriental Interior may be applied after the base coat is 90% dry. If the suction in the base coat is too great to permit ease of application, wet down lightly and uniformly with clean water.

To avoid cutting re-entrant angles, use a trowel with edges rounded to a curve the circumference of a dime.

Use as little water as possible while working, so as to avoid killing the surface. Use damp brush only. Do not attempt to work material after it begins to or has set.

Work top and bottom of wall at same time to avoid joinings.

(F5c) FLOAT FINISH—Apply in two (2) coats. First apply a thin coat, grinding this into base, thoroughly covering the surface, and allow to draw a few moments. The second time over lay the material on perfectly level and then use a **[cork] [carpet]** or **[felt]** float, working the material to a true, even surface, free from float marks and cat faces.

(F5d) TEXTURE FINISH—Apply in two (2) coats. First apply a thin coat, grinding this into base, thoroughly covering the surface, and allow to draw a few moments. The second time over, lay the material on perfectly level, working it into the desired texture.

Proper drying conditions must be maintained in order to protect the color. During the late fall, winter and early spring months, the slow-drying periods of the year, artificial heat and proper ventilation must be arranged for. Failure to provide this protection may result in color difficulties.

NOTE—*The* United States Gypsum Company *will furnish on application a Special Bulletin covering the execution of textured finishes.*

(F5e) TILE OR MASONRY EFFECTS—Mark off with a straight-edge while the material is "green"—preferably from 4 to 5 hours after application. Units shall be rectangular and joints shall be clean cut and even.

(F6) APPLICATION • Red Top Texture Cote

(F6a) LOCATION—The following shall receive Red Top Texture Cote:

NOTE—*List and locate either in schedules on plans or here.*

(F6b) GENERAL—Brown coat should be broomed or left rough under darby to insure a good bond. Remove all loose or projecting particles from base coat which may show through finish coat.

The base coat must be set firm and hard before application of Red Top Texture Cote and approximately 50% dry.

(F6c) FLOAT FINISH—Apply in two (2) coats. First apply a thin coat, grinding this into base, thoroughly covering the surface, and allow to draw a few moments. The second time over lay the material on perfectly level and then use a **[cork] [carpet]** or **[felt]** float, working the material to a true, even surface, free from float marks and cat faces.

(F6d) TEXTURE FINISH—Apply in two (2) coats. First apply a thin coat, grinding this into base, thoroughly covering the surface, and allow to draw a few moments. The second time over, lay the material on perfectly level, working it into the desired texture.

Proper drying conditions must be maintained in order to protect the color. During the late fall, winter and early spring months, the slow-drying periods of the year, artificial heat and proper ventilation must be arranged for. Failure to provide this protection may result in color difficulties.

NOTE—*The* United States Gypsum Company *will furnish on application a Special Bulletin covering the execution of textured finishes.*

(F7) APPLICATION • Keene's Cement Finish

(F7a) LOCATION—The following shall receive Keene's Cement Finish:

NOTE—*List and locate either in schedules on plans or here.*

(F7b) GENERAL—Apply over *dry* walls, using more water if the walls are bone dry. Scratch in a thin coat, then go over a second time filling imperfections and cat faces. Trowel to a smooth finish applying water with a damp brush. Troweling should be completed before the finish has set. In cold, damp weather, provide heat and ventilation until the finish is dry.

(F7c) MARBLE PANELS—Keene's Cement wainscots shall be divided into even vertical panels with V-joints while the material is "green"—preferably from 4 to 5 hours after application. First rake out plaster base at joints for a depth of ¼ and ½ in. wide, laid to a straightedge, plumb and true—clean of loose particles. Apply Keene's Cement as above and form clean cut, even vertical V-joints at panel divisions.

(F7d) TILE EFFECTS—Mark off with a straightedge while the material is "green"—preferably from 4 to 5 hours after application. Units shall be rectangular and joints shall be clean cut and even.

(F7e) POLISHED SURFACES—After the cement is dry, polish with a cloth to a highly polished surface.

(G) ORNAMENTAL PLASTER WORK

(G1) LOCATION

The following rooms require ornamental plaster in accordance with details.

NOTE— *List and locate either in schedules on plans or here.*

(G2) MODELS

(G2a) All ornamental work shall be executed from models.

(G2b) Models shall be furnished at the contractor's expense for all ornamental work. These shall be made by a skilled modeler **[selected] [approved]** by the architect, preferably in **[name place]** so that they may be under the direct supervision of the architect while being prepared. Models must be submitted for approval while in the clay.

(G2c) The contractor shall allow the sum of **[specify]** to cover the cost of models prepared under the direction of the architects, delivered f.o.b. cars **[specify].**

(G2d) The owner will furnish, without cost to the contractor, models prepared under the direction of the architect, delivered f.o.b. cars **[specify].**

(G3) MATERIALS and MIXING

(G3a) (Specify brand) Red Top Moulding Plaster—

NOTE—*See page 24.*

(G3b) Add water only, mix thoroughly and bring to a working consistency.

(G3c) Add 50% lime putty to the moulding plaster where extra plasticity is required for run work.

(G4) APPLICATION • GENERAL

(G4a) All curved work shall be **[run] [or] [cast]** to true radial lines.

(G4b) Leave all ornamental plaster work in perfect condition for decorating, true and smooth, with surfaces and intersections rubbed down with fine sandpaper, if necessary.

(G6) CAST WORK

All run work shall be executed in gauged Moulding Plaster.

Furnish clean cut, accurate templates made in strict accordance with the architect's **[full size]** details.

Run all mouldings straight and true with perfect arrises and miters.

All cast work shall be executed in Moulding Plaster.

Ornamental work shall be cast hollow or solid as best suited to conditions, thoroughly strengthened with fiber and braced where necessary.

All cast work shall be set accurately—true, plumb and straight.

If necessary, members shall be substantially fastened around furring; where nails are used, they shall be galvanized.

Rigid Laboratory Research and Control assure uniform performance in both workability and Finished Plaster

USG *Wallboards*

SHEETROCK

The Fireproof Wallboard

DESCRIPTION • TYPES and SIZES • USES

GENERAL—Sheetrock* is a fireproof wallboard. It is made of gypsum, moulded while in a plastic condition between two sheets of tough protective paper. In the finished product the gypsum has recrystallized and the board is strong, lasting, tough, durable and slightly flexible. The long edges are reinforced and protected by the same material with which the board is sheathed. These patented edges are square, uniform and true. The Sheetrock Armored Joint System* described below provides a uniform, strong, jointless surface ideal for any finish.

THE SURFACE—Sheetrock has a close-grained, highly calendered surface of ivory color. It is tough and highly resistant to scuffing and abrasion. Light colored paints retain their original freshness and clarity. All paints spread farther.

THE CORE — The cellular core makes new Improved Sheetrock more insulating. It also increases flexibility, reducing the chance of breakage in transport, handling and application.

THE NAILING EDGES — Nailing edges on the standard ¼-in., ⅜-in. and ½-in. Sheetrock are square and uniformly thick. The paper enveloping the core has been chamfered so that the reinforced edges are of precisely the same thickness as the rest of the board, thus eliminating bowing in the piles. Panels join evenly and smoothly.

The ½-in. thick tongue and groove Sheetrock has a reinforced tongue and groove, extremely uniform edge assuring perfect fit and precise thickness at the edges.

MARKING—On the edge of each sheet will be found a distinctive marking.

TYPES and SIZES—

Standard Sheetrock—Sheetrock with square edge is made ¼-in., ⅜-in. and ½-in. thick; 32 and 48 in. wide and 4, 5, 6, 7, 8, 9, 10, 11 and 12 ft. long. The widths fit standard 16-in. centering of studding and joists and the lengths readily adapt it to average ceiling heights.

Tongue and Groove Sheetrock—Tongue and Groove Sheetrock is made ½ in. thick (longitudinal edges tongue and groove); 48 in. wide and 8, 9 and 10 ft. long. It is particularly designed for those constructions where the board must be applied with the length at right angles to the framing members.

USES—Because Sheetrock possesses so many high grade, practical features, it has a correspondingly wide field of usefulness.

Use for walls and ceilings in buildings of all types; building new rooms in old buildings; lining garages and attics; fireproofing over heating plants; factory dry rooms; exhibition booths; walls and ceilings of remodeling work. It is particularly adapted to office partition work in existing buildings, since it eliminates the time and dirt of plastering.

Sheetrock walls, particularly when finished with Metal "A"* Joint System or Sheetrock Reinforced Joint System,* take all types of painting and decorating, including wall paper.

Textone, the Plastic Paint, is a particularly desirable decorative medium for Sheetrock.

*Trade-Mark

ADVANTAGES OF SHEETROCK

FIREPROOF—Does not burn or readily transmit heat. It interposes a continuous fireproof sheet of substantial thickness over the wood frame construction.

PERMANENT—Does not disintegrate.

NO EXPANSION OR CONTRACTION—Does not warp, shrink or crack, because it is unaffected by climatic conditions.

SUBSTANTIAL THICKNESS—The standard ⅜-in. thick sheet is almost twice as thick as ordinary fiber wallboard.

STRONG, CLOSE LONGITUDINAL JOINTS—The boards fit close and even. The tough paper covering of Sheetrock is folded square over the longitudinal edges, forming a patented feature which insures an extra strong nailing edge and tight, flush joints. When finished with Sheetrock Armored Joint System, the joints are permanently hidden and are not apparent even under wallpaper.

SOUND AND HEAT INSULATION—Its greater thickness and permanently tight joints increase its insulating qualities materially over those of ordinary wallboard.

It is a non-conductor of sound to a surprising degree.

EASY TO INSTALL—It is sufficiently light in weight for easy rapid handling. The tough sheets can be sawed and nailed like lumber.

SHEETROCK REINFORCED JOINT SYSTEM

GENERAL—The United States Gypsum Company has developed two systems of joint reinforcement, which add permanent armored joint concealment to the other advantages of Sheetrock. The joinings between the boards are "laced" by reinforcing (either the Sheetrock Metal "A" Joint System or the Reinforced (fabric) Joint System) embedded in a perfected joint cement of unusual strength and adhesiveness. This assures permanent concealment of board joinings and lessens the possibility of joint cracks showing through the decoration.

SHEETROCK METAL "A" JOINT SYSTEM—The Sheetrock Metal "A" Joint System of reinforcement consists of a perforated metal tape packed in a box containing 250 lin. ft. 1⅞ in. wide with 15 lbs. of joint cement which is sufficient to treat the joints on 500 sq. ft. of board surface.

The Metal "A" System is somewhat more expensive than the Reinforced Joint System, but is preferable.

REINFORCED JOINT SYSTEM—The Reinforced Joint System consists of a specially woven and processed cloth fabric 2 in. wide, packed as above described for Metal "A" System, except the bag contains 10 lbs. of cement, sufficent to treat the joints on 500 sq. ft. of board surface.

SHEETROCK FINISHER*—Sheetrock Finisher is a specially prepared material, far superior to so-called joint fillers, with none of the disadvantages of the old type of plaster filler. When mixed with water, Sheetrock Finisher forms a cement, which is easily, quickly and economically applied with a semiflexible scraping knife. It is used to conceal joints, spot nailheads and repair surface abrasions. Supplied in 5, 10 and 25-lb. packages. 5 lbs. should finish joints and cover nailheads for 500 sq. ft. of Sheetrock.

Sheetrock Joint Before Reinforcing

"Buttering"—Working the Cement Into the Joint

Appyling Reinforcing Over "Buttered" Joint

Forcing Cement Through Reinforcing—Leveling Surface

*Trade-Mark

United States Gypsum Company

Master Specifications

APPLICATION OF SHEETROCK

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold face type are selective.*

(1) WORK INCLUDED

NOTE—*List and locate all walls and ceilings to be covered with Sheetrock.*

(2) FRAMING

All studding and joists shall be spaced 16 in. on center. Framing in general shall be standard as provided for the application of wood lath.

Provide 2 x 4-in. headers on ceilings to take all end joints of Sheetrock and where required to form nailing base for wood beams, cornices, etc. Cut in 2 x 4-in. headers on walls to form substantial nailing for baseboards, wainscot caps and similar interior woodwork trim.

(3) MATERIALS

(3a) WALLBOARD—Sheetrock as manufactured by the United States Gypsum Company.

(3a1) Standard Sheetrock—**[¼-in.] [⅜-in.] [½-in.]** thick lengths shall be full height from floor to ceiling on walls and to fit paneling or headers of ceiling.

(3a2) Tongue and Groove Sheetrock—½ in. thick, 8, 9, and 10 ft. long.

(3b) NAILS—

(3b1) 3d cement coated common nails (flat head) 1⅛ in. long. (5 lbs. of nails per M sq. ft. required.)

(3b2) Over old plaster, 6d cement coated common nails (flat head) 1⅞ in. long. (13 lbs. of nails per M sq. ft. required.)

(3b3) On building of two or more stories with a floor above Sheetrock ceiling, 4d cement coated common nails (flat head) 1⅜ in. long for ceilings. (8 lbs. of nails per M sq. ft. required.)

(3c) JOINT TREATMENT—

(3c1) Sheetrock Metal "A" Joint System.

(3c2) Reinforced Joint System.

(3c3) Sheetrock Finisher (cement).

(4) PREPARATION OF SHEETROCK

(4a) PILING—Pile flat on floor in center of room, back of board up, except first board. Protect edges.

NOTE—*Doors and windows should be in place before board is delivered on job.*

(4b) HANDLING—Always handle Sheetrock in a vertical position on its longitudinal edge.

(4c) SAWING—Place back of board down and use a sharp hand saw. Support board close to sawing edge. Cuts that are covered with trim may be made with a knife or chisel and a straightedge. Immediately after a cut is made, bevel the cut edges on the face side with coarse sandpaper. Also bevel all mill-cut ends before the board is nailed in place. In no case leave loose paper on cut edges unless they are to be covered with wood trim. Recut the mill ends of any boards that have been made imperfect by handling.

(5) APPLYING SHEETROCK

(5a) GENERAL—All ends and edges shall be perfect. All exposed ends shall be face-beveled. All board shall butt tight along the covered edges and shall be left open ⅛ in. at all abutting cut ends (do not force mill-cut or sawed ends together).

(5a1) Standard Sheetrock shall be applied with the length parallel with framing members.

(5a2) Tongue and Groove Sheetrock (½ in.) shall be applied at right angles to framing members.

(5b) CEILINGS—Erect ceilings first. Apply **[Tongue and Groove]** Sheetrock **[parallel with] [at right angles to]** joists. Tack a strip of wood along the top of studs ½ in. from ceiling joist. Then raise Sheetrock, resting one end on the strip, and place a tee (made of 1 x 2-in.) under the board about one-third the distance from the opposite end to hold Sheetrock in position while nailing. When cross joints are necessary they shall be broken except when the joints are to be covered with wood panel strips or beams.

(5c) WALLS—Apply **[Tongue and Groove]** Sheetrock full length **[vertically] [at right angles to framing].** Edges shall fit tightly against ceiling boards. Scribe and saw to fit if necessary. Square the first board with adjacent walls. Fill spaces above and below windows last. Break joints on partitions (on opposite sides of partitions perpendicular joints shall not come on the same stud).

(5d) NAILING—Drive nails "home," straight in, with heads slightly below surface; do not use a nail set. On intermediate supports space nails 6 in. apart on ceilings and 9 in. apart on walls. At **[all sides and]** ends, space nails 3 in. apart ⅜ in. from edge. First, drive **[a few]** nails at the edge adjoining board last applied; nail the first intermediate stud or joist; nail the second intermediate stud or joist; finally nail **[sides and]** ends. Do not stagger nails on joining edges. **[Nail from the center of the board towards each end.]** If there is a slight bow, set several nails in the board along the nearest support, pushing the board tightly against the support and driving the nails home.

NOTE—*Omit clauses in bold face type in above par. (5d) if Tongue and Groove Sheetrock is specified.*

(6) APPLYING THE REINFORCED JOINT SYSTEM

NOTE—*Complete direction sheet is contained in each package containing reinforcing tape and cement.*

(6a) Remove the roll of fabric, direction sheet and the small envelope of cement from the package.

(6b) Into a water pail or other metal receptacle containing the prescribed quantity of water (see direction sheet), gradually add the contents of the large bag of powdered cement and while adding, mix thoroughly to a consistency thinner than putty (in cold weather take the chill from the water). Be sure to get the entire batch plastic and completely mixed, so it will be pliable enough to work through the weave of the fabric reinforcing to insure a uniformly good bond. Place a wet cloth over the material and let stand for one hour before using.

(6c) After the mixed cement has stood for one hour it is ready for use. If too thin, add some dry joint cement. When cement is left over from one day to the next, cover material with a wet cloth; it is also well to add a little new material and stir batch thoroughly before using again. Caution: Never add plaster of paris or any other material to the cement.

(6d) Cut **[Metal "A" tape] [Fabric]** Reinforcing into proper lengths to correspond to the joints; or cut off a strip as the workman begins to treat each joint.

(6e) With a semi-elastic broad knife, liberally "butter" the joint with the plastic cement and immediately place a strip of **[Metal "A" tape] [Fabric]** reinforcing over this cement, pressing down evenly. Then draw knife firmly over fabric, exerting pressure enough to force cement through the open mesh. At the same time level the surface on each edge of reinforcing. Caution: Be sure to work the cement well through **[metal perforations] [fabric mesh]** and see that cement covers tape.

When dry, sand lightly and feather edges with a thinner coat of cement.

(6f) If a good, level and uniform job has not been secured with this single application, the joint, when dry, shall be gone over again with cement to properly prepare it. Sand smooth if required.

NOTE—*Where decoration over this reinforced joint is to be paint or wallpaper, more care must be taken to make a smooth, even job. A second application is often required. Joints and nailheads should be carefully sandpapered after the cement is dry, or slight imperfections and rough places may show up distinctly under the paper or through paint. Sheetrock Finisher can be used for the second application, as it produces a smooth finish for concealment with paint or wallpaper.*

(6g) Spot all intermediate nailheads with cement.

(6h) Where any joinings between Sheetrock boards are open more than ⅛ in. because of careless application, first fill them level to surface of board with Sheetrock Finisher. After the Sheetrock Finisher is completely "set" and dry, the joint shall then be treated with the fabric and cement.

DECORATING SHEETROCK

GENERAL—Sheetrock can be painted, calcimined, wallpapered, enameled or covered with lining cloth or paper, either with or without panels. It can also be decorated with Textone. Always conceal joints and nailheads by means of the Sheetrock Reinforced Joint System, either Metal "A" or Fabric, or with Sheetrock Finisher.

WALLPAPER—Before wallpapering apply a varnish size. It makes possible the easy removal of the paper before redecorating. Wall fabrics are hung in a similar manner.

PAINTING—See that the surface of Sheetrock is absolutely clean, dry and free from dust. Use a sizing coat or primer, made by mixing equal parts of a good grade of varnish size and ready mixed paint of desired color; or, with white lead thinned with turpentine or benzine, and tinted to suit. Before sizing surface apply a coat of primer over joints and nailheads, and stipple with a stubby brush. When dry apply a coat of primer uniformly and carefully over surface. Let priming coat dry at least 24 hours, then touch up any "flat spots" and let dry before applying the first coat of paint.

CALCIMINE—Before calcimining apply a varnish size, following same method of first brushing joints and nailheads as for painting.

TEXTONE*—Uniformity in color of tinted Textone over Sheetrock and Sheetrock Reinforced Joint System is best secured when joints are painted with a coat of tinted Textone mixed to regular application consistency but well brushed out. When this is dry the regular Textone texture coat may be applied.

USG RESILIENT SHEETROCK SYSTEM*

Reduces Sound Transmission

The USG Resilient Sheetrock System is an adaptation of the USG Sound Control System (see Section on Sound Control Service—Engineering Sales Division) to the application of Sheetrock on either wood studs, metal studs, or wood or metal wall furring. It reduces sound transmission in wallboard construction and permits the wallboard to be attached to steel studs and to be used in suspended ceiling construction.

This adaptation consists of an attachment for fastening the Sheetrock resiliently to the framework of the building. The attachment is in the form of a spring clip to which a perforated metal plate (3¾ x 2⅜ in.) is welded.

The Sheetrock is fastened to this perforated metal plate with Standard USG Self Threading Screws. Holes are punched in the Sheetrock with an awl or similar tool to receive the screws.

Four types of clips permit attaching Sheetrock to wood studs, joists, and furring strips; steel studs, furring channels, and channel suspended ceiling construction.

Perforated plates are furnished alone (without clips) to tie Resilient Sheetrock ceilings to Resilient Sheetrock partitions and are also used in ceiling construction as tie plates in lieu of headers.

The exposed Sheetrock joints in the Resilient Sheetrock System are finished with Sheetrock Reinforced Joint Systems as described and specified for standard Sheetrock application.

*Trade-Mark

SHEETROCK PANELWOOD*

A Genuine Wood Veneer

DESCRIPTION—Selected cabinet woods are applied to the face of special, dense ⅜ in. thick improved Sheetrock (The Fireproof Wallboard) thus creating a superior interior wood faced panel material with all of the advantages inherent in Sheetrock (see page 35). The appearance is identical to high class wood panels.

Sheetrock Panelwood is finished (staining, varnishing, etc.) in accordance with standard specifications for wood.

TYPES OF WOOD

Standard—The standard woods available in Sheetrock Panelwood are walnut, mahogany, and quartered American oak. They are shipped in the natural wood and are ready for whatever type of finish is desired.

Special—In addition to the standard woods above, Sheetrock Panelwood, on special order, can be furnished in English Harewood, Rosewood, Satinwood, Plain and Figured Oriental Wood, Plain and Figured Aspen, Lacewood, Golden Padouk, Carpathian Elm, Peroba, Butternut, Pine and others.

SIZES OF PANELS

Standard—Standard sizes are 4 ft. x 8 ft. and 4 ft. x 10 ft.

Special—Sheetrock Panelwood can be furnished in any size up to maximum standards to meet special requirements at additional cost.

HOW SHIPPED—Sheetrock Panelwood is crated with edges and faces protected to withstand shipment. Standard panels should be used wherever possible to obtain the utmost economy on the job. Panels made in other than standard widths must be cut to size, entailing extra time and expense. Further economy is obtained through the use of panels of standard sizes because an even number may be packed in a single crate. It should always be kept in mind that Sheetrock Panelwood is a finished product, similar to fine wood finish. It should be handled and piled so as to protect the face and edges, and wherever possible should be delivered to the mill or job in the original crates.

OUTSTANDING ADVANTAGES

Fireproof—Sheetrock Panelwood is incombustible—it does not support combustion. The thin wood surface has little or no effect on its fireproof qualities.

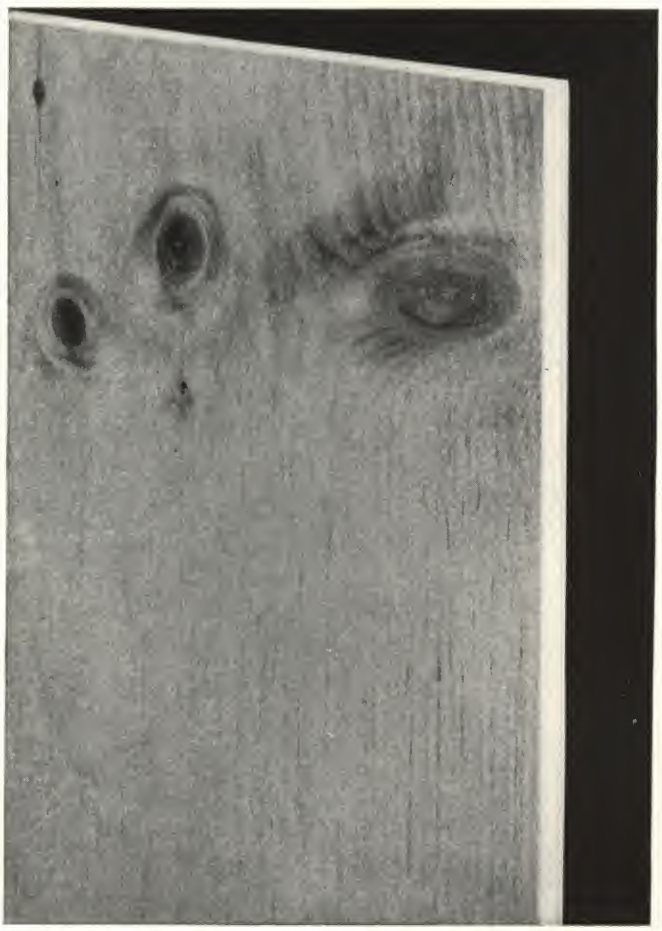
Strong and Rigid—It is outstanding in strength and rigidity. Wherever it is nailed to supports, it grips nails securely. Due to the inherent inertness of the Sheetrock, it does not pull loose from the supports. The Sheetrock is improved in that the gypsum core is denser and exceedingly tough and strong—the fiber covering (over which the wood is applied on the face side) is heavier and stronger than formerly. The material, full ⅜ in. thick, has sufficient body to assure rigidity, long life, and exacting service.

Does Not Expand or Contract—Sheetrock, the base, does not shrink or swell under changes in temperature.

Does Not Warp—The panels, of whatever size, stay flat and true under all conditions.

Durable—The demonstrated durability of Sheetrock is the durability of Sheetrock Panelwood as attested to by literally billions of square feet now in use.

Economical—Because the Sheetrock to which the wood surface is applied can be made in one piece (not built up by plies of a backing) and because large size units (duplicated in wood only at excessive cost) can be made at only slightly greater expense than small ones, Sheetrock Panelwood is economical to buy and to erect.



*Trade-Mark

WOOD GRAINED SHEETROCK*

A Printed Replica of Wood

DESCRIPTION—Wood Grained Sheetrock (a new type of Wallboard) now makes it possible to have the beauty of wood-paneled interiors at wallboard costs. The face surface of this new board so closely resembles wood that it is not easily distinguishable from the actual material itself. It is a reproduction by engraving and printing processes of the graining and color of a genuine wood surface.

LIGHT AND DARK WOODS—Wood Grained Sheetrock is made in four finishes; walnut panels with a repeating pattern that can be matched, plain walnut with a continuous grain pattern, knotty pine and Douglas fir. This choice affords a light, a dark and a medium toned finish, the three groups into which all decorative woods are classified. The surfaces are true reproductions of the woods themselves if they were dressed and matched in large size panels.

ALL THE ADVANTAGES OF SHEETROCK—Like standard three-eighths inch Sheetrock, Wood Grained Sheetrock is fireproof, non-warping, strong, durable, and easy to handle and erect. It has a tough gypsum core that grips nails tightly with the same tough fiber covering that is largely responsible for Sheetrock strength.

Wood Grained Sheetrock stays in place wherever it is nailed, little affected by moisture or temperature changes. This is a distinct advantage in favor of this type of paneling because it avoids the possibility of panels pulling away from mouldings to leave an undecorated margin showing.

WALLBOARD SIZES—The matched walnut panels are made 4 ft. wide x 9 ft. long only. The standard walnut, Douglas fir, and knotty pine boards are 4 ft. wide and from 6 to 10 ft. long. Boards are ⅜ in. thick.

It is easily cut and fitted into place. It can be cut in the same way that standard three-eighths inch Sheetrock is cut, either by sawing or by scoring from the face side and breaking.

MANY USES—The use of Wood Grained Sheetrock extends to all interior construction that is adapted to wallboard treatment. It is used for wood-paneled effects in residences, stores, shops, offices, display rooms, restaurants, tea rooms, hotel lobbies, apartments, dentists' and physicians' offices, club rooms, and for window display backgrounds.

EASY TO ERECT—The method of erection is similar to the erection of standard three-eighths inch Sheetrock where it is used with mouldings or panel strips. Boards are nailed in place and joints are covered with decorative mouldings—just the same as if the panels were made of wood veneer. Other mouldings are used as needed to create the required panel design. For intermediate nailing, use 4d finishing nails driven at a 45-degree angle. Nail heads may be concealed with linseed oil putty mixed with stain to match the surface, or stick shellac of the correct color may be used. Directions will be found on each panel of Wood Grained Sheetrock.

FINISH—VARNISH, SHELLAC, OR WAX—In the manufacturing process the Wood Grained Sheetrock is treated with two lacquer coats to preserve the surface and bring out the wood pattern and coloring. The result is a durable, lasting surface.

If further finish is desired, this can be accomplished by first giving the surface a coat of white shellac (clear) followed, when dry, with one or more coats of varnish (light colored), lacquer, or wax. (Be sure shellac and not varnish is used for first coat.)

*Registered Trade-Mark

SHEETROCK PANELWOOD and WOOD GRAINED SHEETROCK
TYPICAL INSTALLATIONS

INSULATING SHEETROCK

Insulating Sheetrock* is standard, ⅜-in. thick, Sheetrock upon the back of which is mounted a thin, smooth, bright sheet of aluminum. Insulating Sheetrock is applied to the interior face of exterior walls, rafters, or top story ceilings with the bright aluminum side next the framing members. Thus installed, its heat insulating value is equal to or better than that of standard ½ in. thick Fiber Insulating Board—at the same time it has all the inherent qualities of standard Sheetrock as an excellent interior wall finish. It is applied and finished as specified for standard Sheetrock. For complete data see USG "Thermal Insulation" Section.

SHEETROCK TILE BOARD*

A Wallboard Replica of Ceramic Tile

DESCRIPTION—Sheetrock Tile Board is a fireproof, gypsum wallboard made to obtain conveniently and at low cost, beautiful tiled-wall effects. It is a perfected product that makes possible lacquered and enameled surfaces that resemble the best ceramic tile in any shade of color desired, thus enabling the decorator to obtain complete color harmony.

After Sheetrock Tile Board has been erected and decorated, it can be washed clean when soiled. The surfacing of Sheetrock Tile Board is of heavy fiber, which has a distinctive cream color, especially adapted for decorating.

SIZES—Sheetrock Tile Board is made in panels ⅜ in. thick, 48 in. wide and 6, 7, 8, 9 and 10 ft. long. The tile impressions are 4¼ x 4¼ in., a standard size for built-in fixtures. There is a selvage or trimming edge on each panel end outside the tile pattern. The panels are packed two in a bundle, with the tile face inside and edges reinforced.

ADVANTAGES—Because it is made from gypsum, Sheetrock Tile Board does not burn. Neither does it warp or buckle, nor does it harbor vermin. It is light enough for convenient erection and can be nailed, sawed and fitted with the ease of wood.

The material has all the advantages inherent in Sheetrock.

USE—Use for tiled-wall effect in bathrooms, kitchens, lavatories, lunchrooms, dairies, doctors' offices, restaurants, delicatessens and barber shops.

ERECTION AND DECORATING—Complete directions for erection and decorating of Sheetrock Tile Board are on the back of each panel.

Sheetrock Tile Board is Economical to Buy and Economical to Erect. The Large, Flat, True Sheets are Nailed in Place by any Carpenter.

Sheetrock Tile Board is Easy to Decorate. Paint Covers Well over its Ivory Non-absorptive Surface. Joints may be Painted to Simulate Tile Joints.

*Trade-Mark

U&S
BUILDING MATERIALS

WICKWIRE SPENCER STEEL COMPANY

GENERAL OFFICES
41 East 42nd Street, NEW YORK, N. Y.

OFFICES AND WAREHOUSES

WORCESTER, MASS., 80 Webster Street
CHICAGO, ILL., 221 No. La Salle Street
LOS ANGELES, CAL., 1070 No. Alameda Street
BUFFALO, N. Y., 1 River Road
SAN FRANCISCO, CAL., 101 Townsend Street
PORTLAND, ORE., 733 Northwest 16th Ave.

Product

CLINTON WIRE LATH.

For our pages on Electrically Welded Wire Fabric for concrete reinforcement, Chain Link and Iron Fences and Gates, and Metal Grilles, see **File Index.**

Clinton Wire Lath

Clinton wire lath has been a recognized standard of quality for over half a century and is one of the most efficient and trustworthy lathing materials in use at the present time.

Clinton Wire Cloth Company (Wickwire Spencer Company, successor), originator of wire cloth weaving, was the first concern to engage in the manufacture of fireproof lath.

Soon after the invention of power looms for the weaving of woolens and cotton, the Clinton Wire Cloth Company perfected a form of loom for weaving wire and entered into the manufacture of their wire lath. This woven wire mesh was the first efficient form of metal fireproofing ever used. It was used for fireproofing purposes as early as 1856, and many buildings are now standing which were fireproofed with this material at that time.

Wire Lath Has Great Strength—A drawn steel wire is, in the matter of strength and general quality of material, a superior product.

The wire, which is made by being drawn through a die, is, during its manufacture, subjected to a high tensile stress. This drawing and working of the material renders the wire a fibrous material of uniform quality, strong and reliable.

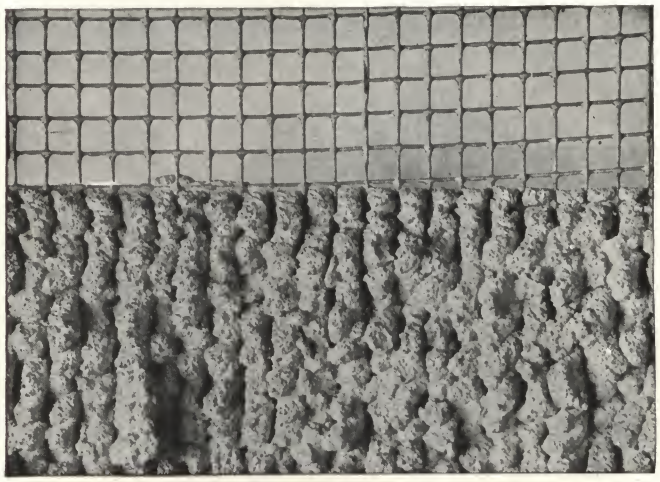
Perfect Key—The primary function of any lathing material is to serve as a foundation to grip and hold mortar. It is the key or the clinch of the backplaster which actually determines the efficiency of the plastered surface.

V-stiffeners—In cases where special rigidity is desired or where furring strips are widely separated, Clinton lath may be provided with V-stiffeners. These are rigid V-shaped ribs of No. 24 gauge steel securely fastened to the wires and extending across the fabric at intervals of 8 in.

In addition to giving additional stiffness, these V-stiffeners also afford an offset of ⅜ in. from the supports to which the lath is attached.

Stock Grades and Sizes of Clinton Wire Lath

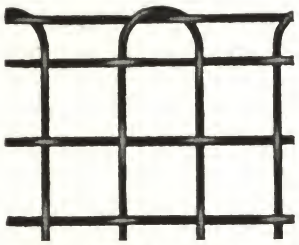
Mesh and Gauge—All stock grades of Clinton wire lath are woven from No. 18 to No. 21 Washburn & Moen gauge wire with 2 and 2½ meshes per lineal inch in each direction.



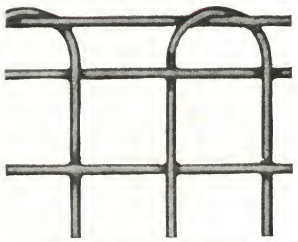
Key of Clinton Wire Lath

New York Telephone Building, Barclay and Vesey Streets, New York, N. Y.

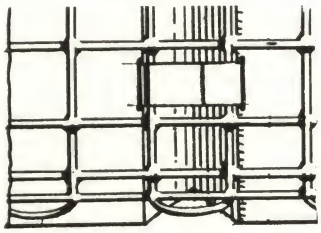
McKENZIE, VOORHEES & GMELIN, Architects
WILLIAMSON & ADAMS, Lathing Contractors



Plain Japanned or Galvanized Wire Lath
2½x2½ mesh



Plain Galvanized Wire Lath
2x2 mesh



Stiffened Galvanized Wire Lath
2½x2½ mesh

Japanned Lath—All sizes of Clinton lath, either plain or stiffened, may be obtained either japanned or galvanized.

Galvanized-after-woven Lath—Clinton lath, either plain or stiffened, is galvanized after weaving.

Size of Rolls—Clinton plain V-stiffened lath, either japanned or galvanized-after-woven, is furnished in rolls 150 ft. long x 36 in. wide.

SHIPPING WEIGHTS AND DIMENSIONS ONE ROLL CLINTON WIRE LATH*

Mesh §	Gauge	Plain Lath				Stiffened Lath			
		Painted		Galvanized		Painted		Galvanized	
		Wgt., lb.	Dia., in.	Wgt., lb.	Dia., in.	Wgt., lb.	Dia., in.	Wgt., lb.	Dia., in.
2	18	126	13	160	14	170	19	220	21
2	19	98	13	122	13	142	18	182	20
2	20	72	12	105	12	116	16	165	20
2½	18	161	13	203	14	203	19	263	21
2½	19	124	13	158	14	165	18	218	20
2½	20	90	13	124	13	135	16	188	20
2½	21	75	13	105	13	120	15	165	19

*All lath 36 in. wide; i.e., height of all rolls 36 in.
§Meshes per lineal inch in each direction.

Specifications for Interior Furring and Lathing

Furnished upon request.

PENN METAL COMPANY

ESTABLISHED 1869

Manufacturers of All Types Metal Lath, Metal Lath with Prime Kraft Board Backing, Metal Corner Beads, Cold Formed Channels and Metal Lath Accessories

BOSTON, MASS., 40 Central Street
PARKERSBURG, W. VA. (Pittsburgh District)

NEW YORK, N. Y., 205 East 42nd Street
LOS ANGELES, CAL., 1423 So. Alameda Street

Products

JUNIOR MESHTEX EXPANDED STEEL PLASTER BASE; DURABOND RIB AND MESH PLASTER BASE; MASTERIB 3/8-IN. RIB PLASTER BASE; PRE-FURRED (SELF-FURRING) PLASTER BASE; PENMETAL CORNER BEADS, Wing, Bullnose, Base and Rail Types; CORNERITE; STRIPLATH; COLD FORMED STEEL CHANNELS; LATHTEX STEEL PLASTER BASE with fibrous Backing.

Junior Meshtex Expanded Steel Lath

Junior Meshtex is a small diamond mesh lath made in standard weights and types of steel. Its mesh is approximately a third less in size than is the mesh of large diamond mesh lath. There are, as a consequence, about 3000 more "keys" to a sheet of Junior Meshtex, and about a third more segments threaded through and reinforcing the plaster. Just enough plaster is let through the lath to form good "keys," but not enough to permit shearing of "keys" and droppings. As a consequence, more plaster stays on the face of the lath. Every trowelful spreads further, which means greater coverage and more rapid application.

The extra wide sheet (27 in.) produces a decided saving in time required for installation, there being 12% fewer laps than where 24-in. sheets are used.

JUNIOR MESHTEX

Weight per sq. yd.	
Painted	Galvanized
2.2 lb.	2.5 lb.
2.5 lb.	...
3.0 lb.	3.4 lb.
3.4 lb.	...

Every sheet of Junior Meshtex is painted singly and baked dry.

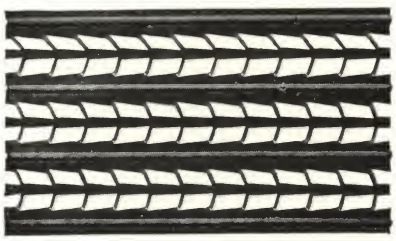
Every sheet is resquared—singly on the ends. This eliminates the bends or curls on the extreme ends of the sheet of lath which are unavoidable when the sheets are resquared after bundling.

Junior Meshtex is used in all types of buildings; for all types of plain and ornamental plastering; for non-bearing 2-in. solid metal lath and plaster partitions and for fireproofing. When "corrugated" it forms a self-furring base and reinforcement for exterior stucco.

Furnished in Hampton metal and copper bearing steel where desired.

Durabond Steel Lath

Durabond is a real economy lath, with a uniform mesh of more than usual stiffness, due to the frequency and unique formation of the ribs, and the slanting curvature of intervening meshes.



Durabond

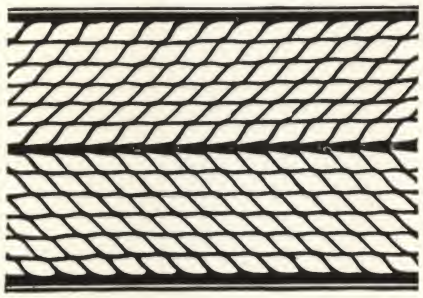
Takes plaster readily, yet its rib and mesh structure prevents the waste of overcoating.

One-third of the lath surface enmeshes and keys the plaster; two-thirds of the lath surface bracing and reinforcing the ceiling or wall. Sheets 27 in. wide, save time in putting up—12% fewer laps than on 24-in. and 50% over 18 in. Every sheet is painted singly and baked dry. Made in weights 2.75, 3.0 and 3.4 lb. per sq. yd., painted; and also galvanized, 3.6 lb. Furnished in Hampton Metal and copper-bearing steel where desired.

Masterib 3/8-in. Rib Lath

Seven ribs spaced 4½ in. on centers. Combines rib and mesh formation. Ribs 3/8 in. in height, in channel or U-shape.

Serves where stud spacing is greater than 16 in. on centers—walls, partitions, floors, roofs, suspended ceilings, etc.



MASTERIB

The ribs of Masterib act as furring and hold mesh area out from supports for free troweling and thorough plaster penetration. The ideal lath for bar-joist construction, metal dome (tin pan) construction, ceilings and floors.

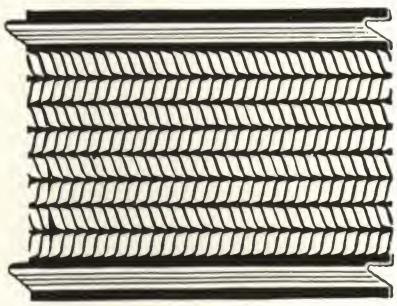
Sheets 27 in. wide—painted singly and baked dry. Made in weights 3.0, 3.4 and 4.0 lb., painted; and 3.6 lb. galvanized.

¾-in. Rib Lath

For concrete roof, wall or floor slabs ¾-in. Rib Lath will give extra satisfaction.

Ribs 1/8 in. high—spaced 6 in. center to center.

Standard sizes painted, covering width 24 in. Lengths 4, 5, 6, 7, 8, 9, 10, 11 and 12 ft. Galvanized or copper steel furnished on order.



WEIGHTS PER SQUARE FOOT

Painted	No. 28 gauge	.46 lb.
Painted	No. 26 gauge	.56 lb.
Painted	No. 24 gauge	.74 lb.
Galvanized	No. 29 gauge	.53 lb.

Penmetal Cornerite

Penmetal Cornerite welds the joint of wall and ceiling together into an unbroken unit. The steel mesh absorbs the stresses and reinforces all the joints.

Penmetal Cornerite should always be used to reinforce the *corners* where *wood lath* or other plastering substitute is used.

4 in. wide on each flange—8 in. wide over all. The strips are an even 8 ft. long.

LATHTEX—THE PERFECTED STEEL PLASTER BASE

Insures Against Heat, Cold, Dampness and Sound

A combination of metal lath and prime kraft board made especially to fill the requirements of the best specifications for plaster work, is a recent technical development of PENN METAL COMPANY. This product—Lathtex—insures at the ordinary cost of metal lath a "back-plastered" construction heretofore available only in this class of work at great expense.

Lathtex (Patent Applied for)

Lathtex, a perfected steel plaster base, has been designed to permit the proper absorption of mortar to insure a correct plaster bond. A high degree of crackproof plastered surface is obtained. This style of construction is stronger than ordinary metal lath work as conclusive tests have proven.

Kraft board is an insulating feature, for thermal and acoustical improvement. It offers a valuable measure of insulation against heat and cold, with practically no added expense. Lathtex is sound retardant. Noises from adjoining rooms are deadened by the heavy kraft board backing. These properties offered by Lathtex make it indispensable to home construction.

Additional structural strength is given by the heavy kraft board forming an integral part of Lathtex. The clips are spaced approximately 4 in. the narrow way of the sheet and 8 in. along its length. The meshes of the metal lath are bonded positively to the plaster. The plaster is thus heavily reinforced with steel, greatly adding to the strength of the ceiling or partition. This and every other feature of Lathtex is the result of intense research.

Lathtex N and Lathtex W

Lathtex is offered in two types, each adaptable to a special condition, furnished in sheets 27x96 in.

Lathtex N is adaptable to an all-steel construction and permits tying on with ordinary galvanized tie wire.

Lathtex W is adaptable to wood construction whether for the partition studs or ceiling joists.

Back of Penmetal Lathtex

Specifications

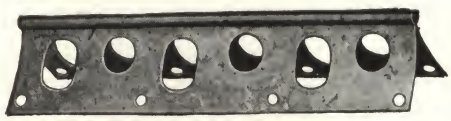
For Suspended Ceilings and All Tie-on Work—Lathtex N, as manufactured by the PENN METAL COMPANY, Parkersburg, W. Va., shall be attached to the furring channels by 18-gauge galvanized annealed wire every 6 in. along the furring channels; there shall be one tie on side laps half way between channels. Sheets shall be lapped ½ in. on the sides and 1 in. on the ends. 3.8-lb. Lathtex is recommended up to 16-in. spacing of channels for ceilings. 3.0-lb. Lathtex is recommended up to 16-in. spacing of studs for partitions.

For Nail-on Work—Lathtex W, as manufactured by the PENN METAL COMPANY, Parkersburg, W. Va., shall be attached to wood studs and joists by not less than 4d and 6d nails, respectively, driven to a penetration of not less than ⅞ and 1 in., respectively; or 1-in. 14-gauge polished staples and spaced not to exceed 6-in. centers, or by clips or devices with equivalent penetration and holding power. There shall be one tie on side laps, half way between supports. Lathtex N may be used for nail-on work if desired. 3.8-lb. Lathtex is recommended up to 16-in. spacing of channels for ceilings. 3.0-lb. Lathtex is recommended up to 16-in. spacing of studs for partitions.

PENMETAL PLASTERING SPECIALTIES

Penmetal Corner Beads

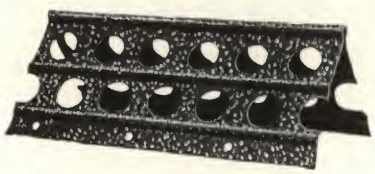
Penmetal Wing Bead—The accepted standard type for general construction. Reinforces plaster corners and insures accuracy of line. Made of tight coat heavy weight sheets that never discolor plaster. Lengths 6, 7, 8, 8½, 9, 10, 12 ft. standard plaster grounds. Weight per 1000 ft. crated, 200 lb.



Penmetal Bullnose Bead—Makes a large rounded corner double fold at nose, provides extra rigidity. Nose formed on ¾-in. radius with 1-in. face. Used in leading hospitals, public buildings, schools, etc.

Lengths 8, 10, 12 ft. standard plaster grounds. Weight per 1000 ft. crated, 360 lb.

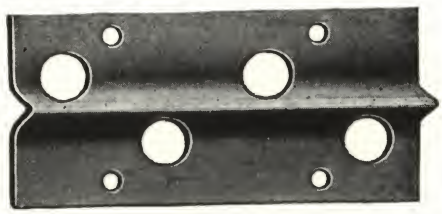
2½-in. Wide Flange Corner Bead—New and improved type of Penmetal Corner Bead with same nose as Penmetal Wing Bead. Lengths, 6, 7 and 8 ft., 8 ft. 6 in., 9, 10, 12 ft. Weight per 1000 ft. crated, 380 lb.



Penmetal Base Screed

Unites plaster and cement or tile at the joints and eliminates cracks.

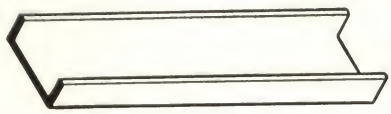
Made in 10-ft. lengths for standard plaster grounds. Weight per 1000 ft. crated, 185 lb. Made from galvanized steel or pure zinc



Penmetal Cold Formed Channels

All formed from No. 16 gauge steel—strong, accurate, uniform, widely used for suspended ceilings, partitions, false beams, etc.

Stock lengths 20 ft.—4 sizes, ¾, 1, 1½ and 2 in. Other lengths as desired. Weights per 1000 lin. ft.: ¾ in., 276 lb.; 1 in., 332 lb.; 1½ in., 442 lb.; 2 in., 553 lb.



SIMPLON PRODUCTS CORPORATION

551 Fifth Avenue, NEW YORK, N. Y.

REPRESENTATIVES IN THE FOLLOWING CITIES

WESTATES PRODUCTS COMPANY (Western Branch),
SAN FRANCISCO, Rialto Building—LOS ANGELES, 923 E. 3rd St.
SYRACUSE, Collum, Fetch & Company, 1407 Erie Blvd., E.
CHICAGO, Butters Building Specialties Co., 4343 Van Buren St.
PHILADELPHIA, James A. Clancy, Harrison Building

ALBANY, BUFFALO, UTICA, NEW HAVEN, SCRANTON, WILKES-BARRE, CLEVELAND, DALLAS, RICHMOND, LOUISVILLE, LEXINGTON, KY., ST. LOUIS, BOSTON, ATLANTA, TAMPA

THE SIMP-L-ON FURRING SYSTEM

(Patents Applied For)

The Simp-L-On System is a complete mechanical method of wall furring which can be specified by architects with positive assurance of perfect results. It is rigid, rustproof, speedy in erection and adaptable to practically all job conditions. The System consists of a metal shield built into the masonry, an adjustable bracket which is inserted in and secured to the shield, a horizontal furring member which is clipped to the projecting end of the bracket, and a mechanical tie of the vertical channel to the horizontal member.

General View of Actual Installation on Brick Wall

It can be plumbed to within ⅛ in. and provides a positive over-all air space of not less than 2 in. (*allow 3 in. to the finished plaster*), which is necessary in order to prevent contact between plaster and masonry. It is not possible for moisture in the exterior wall to reach the plaster due to the design of the Simp-L-On parts (see cross section below).

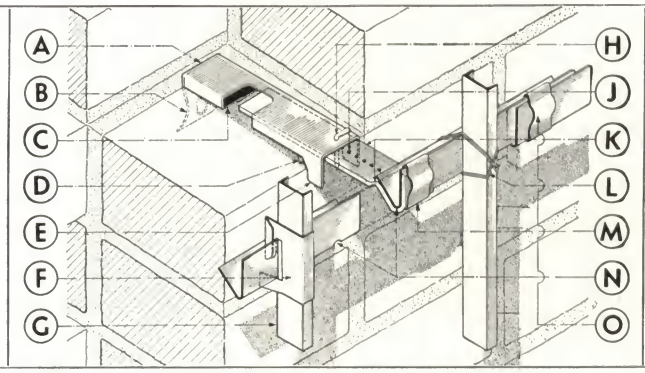
Simp-L-On compares in durability to the best types of tile furring, yet it is less expensive. It is fireproof, termiteproof, permanent, and a plaster protection, yet it does not greatly exceed the cost of wood furring and metal lath.

Type A shield is designed for brick, tile, rubble stone, and concrete block construction. Type B shield should be used for concrete. All Simp-L-On furring members are galvanized and made of copper bearing steel with the exception of the spring clips and securing pins which are cadmium plated. The illustration below shows the furring completely erected ready for the lath.

Demonstration Set

A demonstration in your office of the operation of this simple method is possible with Simp-L-On Demonstration Set which will be sent free on request.

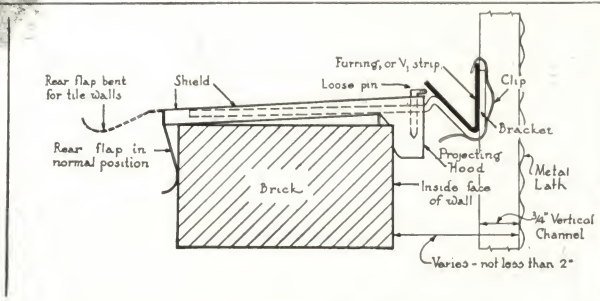
A—22-gauge galvanized metal shield built into brickwork
B—Spring flange, clamping shield to brick
C—Shield entirely enclosed to prevent clogging by mortar
D—Lug under front of shield provides pitch and prevents water flowing toward plaster
E—Projecting hood—provides alignment of shields in relation to face of masonry, prevents moisture on face of wall reaching Bracket "K" and prevents mortar droppings clogging opening
F—Simp-L-On channel clip for securing channels to horizontal member



G—Vertical channels (spaced as desired) to metal lath
H—Removable pin for bracket adjustment
J—Holes for adjustment—¼ in. on centers
K—Adjustable Bracket made in any length desired
L—Ordinary method (wiring) of securing vertical channels
M—Clip securing horizontal member to brackets
N—Horizontal furring member with weep holes
O—Method of overlapping strips and clipping together to form continuous horizontal member

Type "A" Shield for Brick Wall

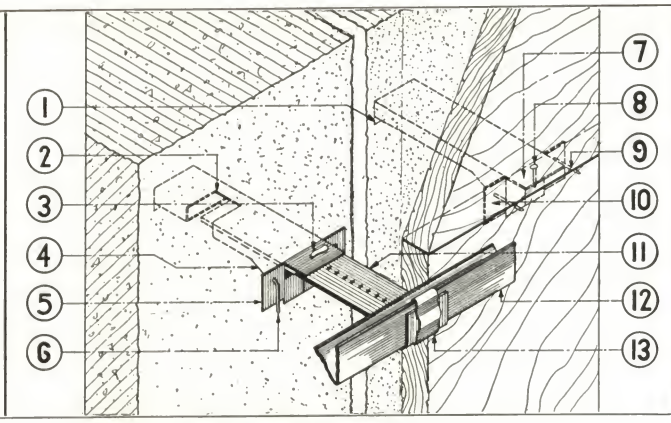
The illustration on the right shows proper way of installing Type A shield over a brick with the bottom lug resting on top of the brick and the projecting flanges and rear flap holding the shield securely clipped to the brick. These line up the shields at right angles to the wall and prevent any movement during the laying of the next course of brick.



For tile or concrete block construction, bend rear flap to horizontal position and lay over vertical web. In stone masonry set a horizontal line, clip shield over a brick and bed brick in the mortar. The adjustable bracket will take care of all irregularities in this type of masonry. In case of very narrow bricks, bend rear flap forward to provide tight fit over the brick.

Proper Installation of Type "A" Shield

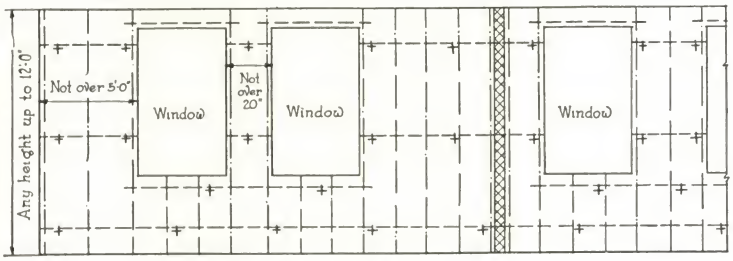
This illustration shows installation of Type B shield for concrete. The wood forms may be constructed with form joints on line of shields and in this case the front flaps are inserted in these joints. Where this is not possible, bend flap (7) up. Nail securely at all three holes using large headed nails driven tight. With this method, the shield cannot be affected by pouring or puddling of concrete. Spacing of Type B shields should be the same as specified for Type A shields.



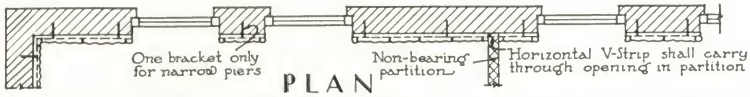
1—Rear flap bent down to cover opening and to form clinch in concrete.
2—Section of shield cut away showing end of bracket.
3—Pin to secure bracket to shield.
4—Brace on side of shield.
5—Side flaps to be nailed to wood form.
6—Nail bent down after forms are removed.
7—Top flap inserted in joint of wood forms and nailed to top edge.
8—Nail through top flap.
9—Nail through side flap.
10—Side flap nailed to wood form.
11—Bracket inserted in shield.
12—V-strip.
13—Clip for fastening V-strip to bracket.

Type "B" Shield for Concrete

Illustration shows spacing of the various members of the Simp-L-On furring on a typical wall condition. Non-bearing partitions may be disregarded in locating shields provided openings are left in partitions for slipping the V-strip through. For 2-in. furred jambs, special jamb brackets can be used. Otherwise the V-strip can be turned into jambs and tied to an anchor nail or in case of non-furred jambs, the lath is turned in and nailed to the masonry. Special brackets of $\frac{3}{16}$-in. material will be furnished for any depth furred space. For determining exact length of special brackets add 2 in. to distance between masonry and lath.



ELEVATION



PLAN

Where long brackets are required to support weight of furring and plaster, i.e., where vertical channels cannot extend to floor or other similar rigid base, the use of knee brackets to prevent bending can be avoided with the following simple and inexpensive method: Each bracket in lower row should be supported by means of galvanized annealed wire (preferably 12-gauge) wired around projecting end of the bracket after V-strip has been erected and extended up to and through one of the holes, close to the wall in bracket directly above. Use a double strand of wire forming a loop which can be twisted until it is taut.

PARTIAL LIST OF ARCHITECTS SPECIFYING THE SIMP-L-ON SYSTEM

Assoc. Architects of Reading, Pa.
The Ballinger Company
Francis J. Berlenbach & Sons
Arthur Brown, Jr.
Brown & Whiteside, Inc.
Coffin & Coffin
Corbett & MacMurray
Cross & Cross
Randolph Evans
Frankel & Curtis
Cass Gilbert
Robert R. Graham
Hacker & Hacker
Hood & Fouilhoux
Lester L. Jones
Knappe & Morris
L. J. Lincoln
Manske, Rotty & Assoc.
McKim, Mead & White
W. E. Moebus
N. Y. Central R. R. Co.
Office of John Russell Pope
James J. O'Shaughnessy
Henry C. Pelton
Pennington, Lewis & Mills
Robert J. Reiley
Reinhard & Hofmeister
Rossiter & Muller
John T. Rowland, Jr.
Starrett & Van Vleck
Gustave E. Steinbach
Tooker & Marsh
U. S. Treasury Department, Supervising Architect
Voorhees, Gmelin & Walker
D. Everett Waid

SPECIFICATIONS

(For functional specifications omit name of manufacturer)

Under the Heading of Mason Work

Furnish and install 22-gauge galvanized copper bearing steel shields approximately ¼x1x4 ins. long with flexible rear flap and projecting flanges at front to clip over the brick and with lug on bottom to provide pitch in wall. Top projecting flange to be perforated on center for securing bracket furnished by others. Shields shall be spaced not over 4 ft. 0 ins. apart on continuous horizontal lines and approximately 4 ft. 6 ins. apart vertically starting not over 1 ft. 0 ins. above floor level and not over 1 ft. 6 ins. below finished ceiling. Provide shields approximately 8 ins. from all corners and wherever required to provide furring around concealed piping, etc. Under and over wide openings provide at least two horizontal courses of shields. For openings not over 5 ft. wide, one shield located in center will be sufficient. Submit samples for approval. [Shields shall be similar and equal to those manufactured by the Simplon Products Corporation, 551 Fifth Avenue, New York, N. Y.]

The Mason Contractor shall use care in locating these shields and shall reimburse the Furring Contractor for any additional work required because of omissions or improper locations. This Contractor shall consult with the Furring Contractor as to requirements.

Under the Heading of Furring

Furnish and insert into the shields provided by the Mason Contractor, adjustable brackets of 12-gauge galvanized copper bearing steel. Brackets shall be of sufficient length to provide the air space called for on the plans, and shall be of heavier gauge for unusual conditions where required. Standard brackets may be used for continuous furred spaces not exceeding 3 ins. in depth. Special brackets of $\frac{3}{16}$ in. material shall be provided for continuous furred spaces exceeding 3 ins.

One bracket shall be provided for each built-in shield. In case shields have been omitted or improperly built in, this Contractor shall provide fixed brackets secured to the masonry in approved manner to provide proper support for the furring. For spacing of the shields, see Mason Specifications.

Furnish and erect horizontal strips made of 16-gauge galvanized copper bearing steel of V-shape with 1-in. legs so as to fit snugly into the projecting end of the bracket. Clip V-strips to the brackets with cadmium plated or galvanized spring clips and clip overlapping V-strips with similar clips to form continuous member. Plumb furring to within ⅛ in. and fasten bracket to shield with galvanized or cadmium plated pin. To these horizontal members erect ¾-in. [1-inch] vertical painted [galvanized] furring channels spaced 16 ins. on centers [spacing determined by type of lath] secured by means of special galvanized channel clips. Directly over and under openings not exceeding 5 ft. in width, provide additional horizontal V-strip clipped to the bracket at the center and to the continuous vertical channel at each jamb with channel clip.

Submit samples of all material for approval of Architects. [All the above materials except vertical channels shall be similar and equal to the Simp-L-On Products as manufactured by the Simplon Products Corporation, 551 Fifth Avenue, New York, N. Y.]

WHEELING CORRUGATING COMPANY

Manufacturers of Steel Building Materials

WHEELING, W. VA.

BRANCH WAREHOUSES

ATLANTA, GA.
BOSTON, MASS.
BUFFALO, N. Y.
CHICAGO, ILL.
COLUMBUS, OHIO
DETROIT, MICH.
KANSAS CITY, MO.
LOUISVILLE, KY.
MINNEAPOLIS, MINN.
ST. LOUIS, MO.
NEW YORK, N. Y.
PHILADELPHIA, PA.
RICHMOND, VA.

Products

Manufacturers of:

Cop-R-Loy Black and Galvanized Sheets.

Cop-R-Loy Roofing Terne Plate.

Cop-R-Loy Fire Door Terne Plate.

Metal Ceilings.

Metal Lath and Plastering Accessories.

Spanish Metal Tile.

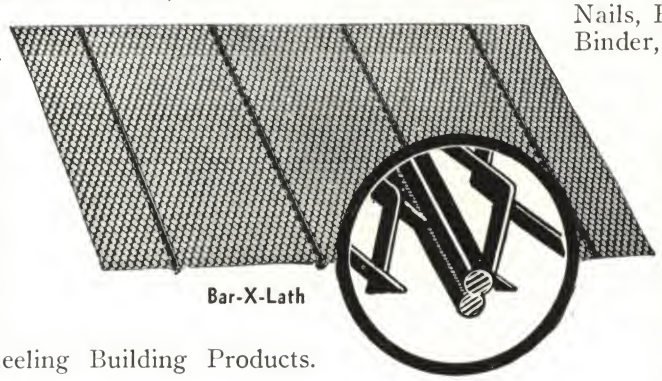
Metal Shingles.

Ash Pit Doors, Coal Doors, Wall Ties, Wall Plugs, Stucco Binder, Welded Wire Fabric, Conductor Pipe, Eaves Trough, Roof Gutters, Ridge Roll and Accessories; Furnace Pipe and Ells.

Cut Steel Hardened Flooring Nails, etc.

Cop-R-Loy

Cop-R-Loy is a carefully refined ferrous metal alloyed with pure copper, an exclusive Wheeling product. Its durability under atmospheric conditions and its soft workable qualities have made it adaptable to all principal sheet metal work. It is specified for a great many varieties of construction and is used for numerous Wheeling Building Products.



Bar-X-Lath

Cop-R-Loy Sheets

Cop-R-Loy Galvanized Sheets are universally used for ventilating installations and all other sheet metal work required for building construction. All gauges and sizes available.

Cop-R-Loy Roofing Terne Plate

Wheeling Cop-R-Loy (Old Style or Old Method) Ternes are made with a base of rust-resistant Cop-R-Loy and coated by the hand dipping process with new lead and tin. Standard sizes of plates are 14x20 and 20x28 ins. Coatings up to 47 lbs. per base box of 112 sheets are supplied as specified. Supplied in Boxes, or in Rolls, Seamed and Soldered.

Steel Ceilings

In keeping with the modern trend Wheeling Moderne Ceilings have been designed with the purpose of creating entirely new and pleasing effects without influence of any of the earlier popular styles.

Experiment has made possible the practical use of aluminum coatings for all Wheeling Moderne Steel Ceilings thereby contributing the advantages of such coatings which are vastly superior to anything heretofore used.

Satisfactory results may be obtained by the use of fewer coats of paint on the erected ceiling, a saving of paint, labor and time. As for protection against tarnish and stain, or rust, the aluminum coating is admittedly superior. The backs of the plates of an erected ceiling are likewise better protected because of the aluminum coating.

Exceptionally popular for churches, schools, business quarters, public halls, kitchens, bathrooms, and largely used for remodeling interiors where improvement in appearance, fire protection and sanitary features are desired. Erected over old ceilings with ease and economy. Catalog furnished on request.

Metal Lath and Accessories

A complete line of flat expanded diamond lath, flat rib and 3/8-in. Rib Lath, Corner Beads, Base Screeds, Picture Mold, Corner Lath, Strip Lath, Tie Wire, Stub Nails, Pencil Rod, Channels, Stucco Binder, Wall Ties and Wall Plugs.

Bar-X-Lath

Wheeling's exclusive, new, and popular standard diamond mesh fabric reinforced at 7-in. intervals on both sides of the sheet by twin rods welded together. Extremely rigid; easiest to handle and apply; makes ideal partition walls; permits wider spacing of supports. Made of Cop-R-Loy or painted steel. Sheets 27x96 in.

Arch Lath

A distinctive type of sheet steel lath weighing 4.5 lbs. per square yard. This is a solid die cut Sheet Lath. It is not expanded metal. The strongest and most rigid of fireproof lath.

Spanish Metal Tile and Trimmings

Five Grades—

(1) Cop-R-Loy Terne Base, Hand Dipped (Galvanized) in Pure Molten Zinc after being formed. This is super-quality in Metal Tile.

(2) Stamped from Galvanized Cop-R-Loy Sheets.

(3) Stamped from Galvanized Steel Sheets.

(4) Cop-R-Loy Terne Base, Painted.

(5) 16-oz. Copper.

Cop-R-Loy Conductor Pipe and Eaves Trough

All types and sizes, plain round, round corrugated, plain square and square corrugated, made of zinc coated Cop-R-Loy, terne coated Cop-R-Loy, zinc coated steel or 16-oz. copper.

All necessary accessories for the installation.

Welded Wire Reinforcing Fabric

Furnished in rolls or flat sheets in various gauges and spacing. Wire made to specifications of American Society for Testing Materials.

Wire Products

Wide variety of wire and nails for all purposes. Hardened Flooring Nails a specialty.

MILCOR STEEL COMPANY

MILWAUKEE, WIS.
CHICAGO, ILL. KANSAS CITY, MO. CANTON, OHIO LA CROSSE, WIS.

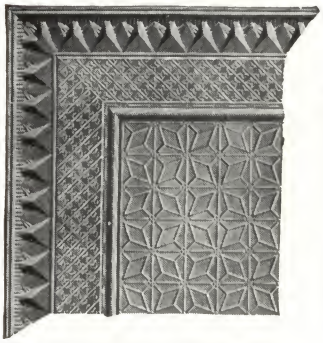
SALES OFFICES IN PRINCIPAL CITIES

For Our Catalogues on Milcor Fireproof Products, Ventilators, Access Doors, Steel Decks and Skylights, see File Index

Drug Store with Spanish Texture Steel Ceiling

School Children Protected Against Falling Plaster by Milcor Steel Ceiling

Automobile Show Room with Milcor Steel Ceiling—Practical and Attractive



MILCOR STEEL CEILINGS

The New Trend for Modernizing or New Buildings

Recent developments in modern design together with new practical ideas for application now make Milcor Steel Ceilings unsurpassed in producing fine, artistic effects adapted to every type of structure. The motifs are authentic, their detail correct, their treatment finished. Varieties of designs and combinations are available that will meet the most discriminating requirement.

It is also possible, at nominal additional cost, to have special designs made for exclusive use. Milcor has created many exceptionally beautiful modern interiors through this service which makes possible a widely diversified use of the many opportunities of design in metal.

Superior Advantages of Steel Ceiling Construction

1. Cannot crack, shrink, warp or fall.
2. Permanently firesafe.
3. Easily applied.
4. Economical, durable.
5. Cannot absorb dust, moisture or germs.
6. Unequalled for beauty.
7. Easily cleaned.
8. Vibration jolts, or settling strains do not affect them.

Milcor "Invisible Joint" Metal Ceiling "Moderne"

A completely new metal ceiling design, modernistic in feeling and yet conservative enough to lend an atmosphere of beauty to any interior, one of hundreds of beautiful designs.

Spanish Texture in Metal

The charm of old Spanish walls and ceilings is reproduced in Milcor Spanish Texture. Spanish Texture, properly decorated over an old ivory base, so closely resembles rough-textured plastering, that it can be distinguished only upon very close examination.

Spanish Metal Tile

Has the rare beauty and charm of that quaint heavily-ribbed tile of old Spain, plus the practical advantages of metal. The weather-baffling "Titelock" design provides the most practical adaptation of this popular motif in roofing.

MILCOR

SPANISH AND AMERICAN TILE

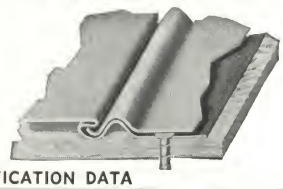
A grounded metal roof gives the best-known protection against lightning or fire. Ordinary, light wood-sheathing is sufficient because the light weight of this tile does not demand heavy, special structural work throughout the building, as required for heavy clay tile roofs. Initial cost is low and this permanent metal tile cannot crack, break, warp, curl or rot. In terms of service it makes an exceptionally economical roof.

American Metal Tile

Sufficiently bold in design to create strong lights and shadows. The precision in appearance which is so desirable in heavy slate roofs is obtained through American Metal Tile, but excessive weight is avoided.

The Milcor "Titelock" Feature

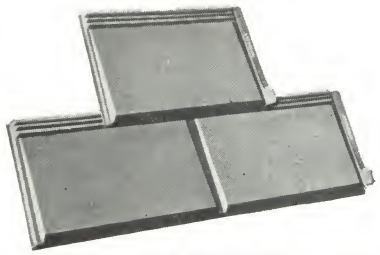
Makes leakage impossible. Rain or snow cannot get under the metal at any point. As it is laid flat, it locks tightly. All nail holes are covered by the overlapping tile.



Spanish Metal Tile

SPECIFICATION DATA

	Spanish tile	American tile
Actual size.....in.	10 x14	14x10
Coverage size.....in.	8½x11¾	12x 8
Number of units per square.	144	148
Weights per square: lb.		
IC—painted	110	
IX—painted	135	105
IC—galvanized after formed	130	
IX—galvanized after formed	155	115
26-ga. armco painted.....	160	120
26-ga. armco galvanized after	180	130
14-oz. copper.....	175	130



American Metal Tile

Send for the Beautiful New Catalogue, Showing Latest Designs

ATLANTIC GYPSUM PRODUCTS COMPANY

Manufacturers and Distributors of a Complete Line of Gypsum and Related Building Products

40 Central Street
BOSTON, MASS.

205 East 42nd Street
NEW YORK, N. Y.

Jeffrey Street and Delaware Avenue
CHESTER, PA.

MANUFACTURING PLANTS AND WAREHOUSES

CHESTER, PA.
IRVINGTON, N. J.
JAMAICA, N. Y.
MOUNT VERNON, N. Y.
NEW YORK, N. Y.
NEWARK, N. J.
PHILADELPHIA, PA.
PORTSMOUTH, N. H.

For Our Other Products, see File Index

ROCKWALL GYPSUM LATH
ROCKWALL GYPSUM METALLIZED LATH
ROCKWALL METAL LATH and ACCESSORIES
ROCKWALL INSULATING LATH
ROCKWALL PLASTERS
- Gypsum Neat Plaster
- Gypsum Sanded Plaster
- Gypsum Wood Fibered Plaster
- Concrete Bonding Plaster
- Acoustical Plaster
- Polishing Plaster
- Patching Plaster

ROCKWALL
(Reg. U. S. Pat. Off.)

TRADE-MARKS

RIVERSIDE PLASTERS
- Gauging Plaster
- Moulding Plaster
- Trowel Finish
- Sand Float Finish

ROCKWALL LIMES
- Masons Hydrated
- Finishing Hydrated

ROCKWALL GYPSUM PARTITION TILE
ROCKWALL INSULATING BOARD
ROCKWALL GYPSUM WALL BOARD
ROCKWALL GYPSUM METALLIZED WALL BOARD
ROCKWALL REINFORCED JOINT SYSTEM
KEENES CEMENT

QUALITY—SERVICE

Experience

The ATLANTIC GYPSUM PRODUCTS COMPANY, throughout its forty-five years of manufacturing experience, has concentrated all of its energies in making Rockwall Products of the highest quality and in developing distribution into a competent and efficient service.

Rockwall Quality

Rockwall Products are made from the highest grade raw materials with careful supervision of manufacturing processes and exacting tests in the laboratory and in the field. Rockwall quality assures satisfaction.

Manufacturing Facilities

ATLANTIC GYPSUM PRODUCTS COMPANY plants, located at Portsmouth, N. H., New York, N. Y., and Chester, Pa., are strategically located for prompt and efficient service by rail, by water, or by truck to all points in the eastern section of the United States. These plants are completely equipped with the latest modern machinery for quality and large scale production.

Quarries

The ATLANTIC GYPSUM PRODUCTS COMPANY owns and operates its own quarries of gypsum rock noted for exceptional purity and strength.

The Portsmouth, N. H. Plant

ROCKWALL GYPSUM LATH

Fire-Safe Construction

Description

Rockwall Gypsum Lath is a pure gypsum core surfaced with tough fiber surfacing especially developed to provide an excellent bond for gypsum plaster. Edges are closed and surfacing fiber is lapped a full inch into the gypsum core to make the strongest possible nailing edge.

Back of Lath Showing Identification

Sizes

Rockwall Gypsum Lath is made in the following standard sizes:

16x32x⅜ in. thick—9 pieces—32 sq. ft. bundled.

16x48x⅜ in. thick—6 pieces—32 sq. ft. bundled.

It is also manufactured in thicknesses of ¼, $\frac{5}{16}$ and ½ in., and in sizes 32x36 and 32x48 in.

Section Through Both Edges Showing the Closed Edge

Rockwall Gypsum Lath Advantages

(1) Fireproof.
(2) Full 1-in. nailing edge.
(3) Easily applied.
(4) Light weight.
(5) Saves plaster waste.
(6) Permanent plaster bond.
(7) Hastens plaster drying.
(8) Exclusive fiber surfacing.
(9) No shrinking or warping.
(10) Braces framing.
(11) Uniform plaster thickness.
(12) Eliminates moisture.

HOW TO APPLY ROCKWALL GYPSUM LATH

(1) All walls, ceilings and partitions, as specified, shall be Rockwall Gypsum Lath.

(2) Cutting of lath shall be done by scoring with a hatchet or sharp knife and then break over a straight-edge.

(3) Lath shall be securely fastened at center and end supports with 1¼-in. coated wire nails, ⅜-in. head, 6 in. apart at center supports, 3 in. apart at ends. Nail centers first.

(4) Put on sheets horizontally on walls and across the supports on ceilings. Break joints on studding, furring and joists and stagger joints between walls and ceilings so vertical wall joints will not meet the ceiling joints.

(5) Do not butt lath above or below windows or above door openings on studs extending from floor to ceiling alongside such openings, but extend over to next support on either side.

(6) Do not wet lath before plastering is applied.

ROCKWALL INSULATING LATH

Rockwall Insulating Lath has a low conductivity of .34 B.t.u. per hour per sq. ft. per degree F., per inch thickness. It is made in 18x48-in. units, ½ and 1 in. thick. For further data see our pages on acoustics.

ROCKWALL GYPSUM METALLIZED LATH

Rockwall Gypsum Metallized Lath combines an ideal plaster base with reflective insulation made possible by placing aluminum on one side of the board. This new type insulation is made from the standard fire-safe Rockwall Gypsum Lath in the ⅜-in. thickness, size 16x48 in.

ROCKWALL GYPSUM PARTITION TILE

Rockwall Gypsum Partition Tile are made of select gypsum to meet fully the standard specifications of the American Society for Testing Materials. All tile are 12 in. wide and 30 in. long.

Thicknesses are 1½-in. furring; 2-in. furring; 2-in. solid; 3-in. solid; 3-in. hollow; 4-in. hollow and 6-in. hollow.

Partition Tile

ATLANTIC GYPSUM COMPANY PLASTERS

Quality—Service

Atlantic Gypsum Products Company Plasters are controlled from the time the rock is quarried until the material is on all finished wall. A rich working, light, fluffy material of uniform characteristics is the result of constant supervision, laboratory and field test.

Packaging

Rockwall Plasters are packed and shipped in 100-lb. multi-wall paper bags. The Rockwall trade mark and directions for use are printed on the face of each bag.

Workability

Rockwall Plasters are made easy working. Carefully selected rock and specially developed regrinding process result in maximum working qualities, uniformity, sand carrying capacity, coverage and hardness of the finished wall.

Covering Capacity

Covering capacity depends upon conditions under which the plaster is applied—upon the mechanic, upon the thickness of the grounds, upon the condition of the base, quality of sand and other factors.

The covering capacity given below for each type of plaster is based upon average conditions, and assumes that the materials are mixed and applied in accordance with standard specifications.

A. S. T. M. and Federal Specifications

Rockwall and Riverside products meet all the requirements of the standard specifications of the American Society for Testing Materials and of the Federal Government.

Grounds—All lathing and plastering shall be laid to not less than the following grounds:

¾ in. for ¼-in. gypsum lath, wood lath, expanded metal lath; ⅞ in. for ⅜-in. gypsum lath; 1 in. for ½-in. fibre insulating board lath; ⅝ in. for brick or clay tile; ½ in. for gypsum tile.

ROCKWALL GYPSUM PLASTERS

Approximate Yardage per Ton on Various Plastering Bases

Type of plaster	Gypsum Lath	Metallized or Gypsum Insulating Lath	Metal Lath	Wood Lath	Gypsum Tile	Brick and Clay Tile	Concrete Surfaces	Bags, weight
Rockwall Neat	225–240	225–240	105–135	180–210	190–220	135–165	Use Bond Plaster	Paper 100 lbs.
Rockwall Sanded	75–80	75–80	35–45	60–70	65–70	45–55	Use Bond Plaster	Paper 100 lbs.
Rockwall Wood Fibered	115–120	115–120	55–65	90–100	.....	.....	Use Bond Plaster	Paper 100 lbs.
Rockwall Bond	90 to 120 sq. yds.—depending on surface of concrete							Paper 100 lbs.
Riverside Gauging	1600 sq. yds. with 2 tons hydrated lime							Paper 100 lbs.
Riverside Prepared Sand Float	250–275 sq. yds.							Paper 100 lbs.
Riverside Prepared Trowel	350–400 sq. yds.							Paper 100 lbs.
Rockwall Acoustical Plaster	115–120 sq. yds.							Paper 50 lbs.
Keene's Cement	400–500 sq. yds.							Paper 100 lbs.

ROCKWALL BASE COAT PLASTERS

Sand used for mixing with plasters shall meet the specifications for Plastering Sand of the A.S.T.M.

ROCKWALL GYPSUM NEAT PLASTER

(Hard Wall or Cement Plaster—Fibered or Unfibered)

Rockwall Neat Plasters are used for scratch and brown coats. They are always used with sand.

Mixing

(a) For scratch coat: on gypsum, metal, wood and insulating lath, mix two parts by weight of dry sand to one part of plaster. For browning coat: mix three parts by weight of dry sand to one part of plaster.

(b) For scratch coat and browning coat: on brick, gypsum and clay tile, mix three parts by weight of dry sand to one part of plaster.

Application

(a) On Gypsum Lath—Do not wet lath. Apply in two coats. Scratch in first coat well to fill joints between lath units. Darby brown coat lightly—use water sparingly.

(b) On Wood Lath—Soak lath several hours before applying plaster. Apply in two coats. Apply scratch coat with sufficient pressure to obtain a good key. Darby brown coat lightly—using water sparingly.

(c) On Metal Lath—Apply in two coats. Apply scratch coat to lightly cover lath and fill mesh. Scratch first coat and allow to set. Apply brown coat. Darby lightly—use water sparingly.

(d) On Brick, Gypsum and Clay Tile—Soak brick or clay tile walls. Sprinkle gypsum tile walls lightly. Apply in two coats. Darby brown coat lightly—use water sparingly.

ROCKWALL WOOD FIBERED PLASTER

Rockwall Wood Fibered Plaster is a gypsum plaster containing finely shredded wood fiber. It requires only the addition of water to be ready for use.

Mixing

Hoe plaster into water and allow to soak from 10 to 20 minutes. Then mix to proper consistency.

(a) For scratch coat and browning coat: on gypsum, metal, wood and insulating lath, use without the addition of any sand. Note—If preferred for the browning coat one part by weight of dry sand may be added to one part of plaster.

(b) For scratch and browning coat: on brick, gypsum, and clay tile, mix one part by weight of dry sand to one part of plaster.

Application

(a) On Gypsum Lath—Do not wet lath. Apply in two coats. Scratch in first coat well to fill joints between lath units. Scratch first coat and allow to set before applying brown coat. Apply brown coat and brown surface before it sets.

(b) On Wood Lath—Soak lath several hours before applying plaster. Apply in two coats. Apply scratch coat with sufficient pressure to obtain a good key and scratch surface. Apply brown coat and broom surface before it sets.

(c) On Metal Lath—Apply in two coats. Scratch first coat and allow to set before applying brown coat. Apply brown coat and broom surface before it sets.

(d) On Brick, Gypsum and Clay Tile—Soak brick or clay tile walls. Sprinkle gypsum tile walls. Apply in two coats. Broom the brown coat surface before it sets.

ROCKWALL GYPSUM SANDED PLASTER

A gypsum plaster to which has been added at our factories clean sharp plastering sand, graded and screened. It requires the addition of water only.

Excellent for use in remodel or repair work, winter use, or where good sand is difficult to obtain.

Mixing

Add nothing but water. Hoe plaster into water. Mix thoroughly. Mix thin first, then add dry material to bring to proper consistency.

Application

Apply as specified above for Neat Plaster.

ROCKWALL CONCRETE BONDING PLASTER

A specially prepared plaster for use over concrete surfaces. Can be used for both scratch and brown coats.

Directions

Concrete surfaces must be dry, clean, free from oil and efflorescence and roughened if surface is smooth. In mixing, add nothing but water. Hoe plaster into water. Allow to soak at least ten minutes, then mix thoroughly.

Application

Apply in two coats. First, apply a thin, tight coat, scratch, and allow to set. Then apply second coat just thick enough to level out inequalities and broom before it sets.

ROCKWALL GYPSUM FINISHING PLASTERS

RIVERSIDE GAUGING PLASTER

Riverside Gauging Plaster is made from specially selected calcined gypsum to insure excellent working qualities and color. It is made in either quick set or slow set; both are white in color. This plaster is used with lime putty to obtain the regular hard finish on walls and ceilings. Because of its whiteness it is especially desirable for this class of work.

RIVERSIDE MOULDING PLASTER

Riverside Moulding Plaster is really a specialty product. Only the very highest grade of a pure white plaster is suitable for the best casting and moulding work. It is to meet these exacting requirements that Riverside Moulding Plaster is manufactured from a rock specially selected for its whiteness and suitability for fine work. It develops little heat in setting, resulting in low expansion and contraction. It makes hard, strong moulds and run work.

RIVERSIDE PREPARED FINISHES

These are prepared gypsum plasters for use as finish over gypsum base coats in lieu of lime putty finish. These materials have excellent working qualities, set quickly and result in walls that may be decorated as soon as they are dry.

Mixing

Mix with water only. Hoe plaster into water and allow to soak for ten minutes. Mix thoroughly to a creamy consistency.

Trowel Finish

Have base coat half green. Apply in three coats, the first coat thin, well scratched into surface. Allow to draw and level off with second coat. Apply third coat thin to fill in imperfections and allow to draw. Trowel to a smooth finish using damp brush. Complete troweling before material sets.

Sand Float Finish

Have base coat half green. Trowel on and finish with a float to true and even surface. Use damp brush only. Complete before finish sets.

ROCKWALL ACOUSTICAL PLASTER

Rockwall Acoustical Plaster is a sound absorbing plaster in which gypsum is used as a cementitious binder for carefully selected aggregates and other materials. For detailed description see our pages on Acoustical Plaster File Index.

ROCKWALL PATCHING PLASTER

Rockwall Patching Plaster is an all-service plaster for use around the home in repairing damaged walls and ceilings. It is provided in packages convenient both to the mechanic and the home owner. Packed in 2½ and 5-lb. packages; 50 and 100-lb. bags, and 300-lb. barrels.

ROCKWALL HYDRATED LIMES

Rockwall Hydrated Finishing Lime

This is a high grade Ohio hydrated finishing lime, extremely white in color. Supplied in 50-lb. bags.

Rockwall Hydrated Masons Lime

A highly plastic building lime, excellent for use in cement mortar on brickwork or for any purpose in place of lump lime. Supplied in 50-lb. paper bags.

ROCKWALL KEENE'S CEMENT

An exceptionally hard and dense gypsum finish, fast finish or slow setting, which can be troweled without danger of killing the surface.

Used where a hard dense finish is required.

Rockwall Keene's Cement is manufactured by Best Bros. at Medicine Lodge, Kansas, recognized as the standard.

ROCKWALL GYPSUM WALL BOARD

Reversible—Both Sides Alike

A Gypsum Wall Board—A Real Fire-Retardant

Rockwall Gypsum Wall Board is a modern standard wall board, strong, fireproof, good looking. The following features indicate its usefulness:

Cream Color Cover—Rockwall has a smooth, light colored surface attractive in itself without further decoration. It is particularly well suited for covering with the light shades of paint so popular today. Special treatment has made the cover hard and practically scuff-proof. Paint spreads easily on the smooth non-absorbent surface and covers exceptionally well. Rockwall is an ideal wall board where looks are an important consideration.

Improved Core—Rockwall has an improved core of purest gypsum, strong and rigid, yet light enough for easy handling. It eliminates unnecessary weight.

Reinforced Covered Edges—The tough fibre cover is lapped into the gypsum core a full inch to give the greatest possible strength to the nailing edge. Three thicknesses of fibre grip the nail firmly and keep the core from cracking or splitting. Edges are square and of identical thickness for easy fitting.

Reversible—Both Sides Alike—There are no markings on either face of Rockwall to be covered. Both sides have the same tough, specially treated surfacing. If one side should become accidentally damaged, the board is simply turned and faced the other way. This Rockwall feature saves time, labor and stock and assures uniform finish. Rockwall Gypsum Metallized Wall Board has an aluminum surface on one side.

ROCKWALL
GYPSUM WALL BOARD

TRADE-MARKS

Section Through Edge of Rockwall Gypsum Wall Board
Showing the reinforced edge and identification

Fire-resistant—Use of Rockwall reduces fire hazard to a minimum. Underwriters' tests prove the incombustibility of Rockwall and make it an ideal wall board to use when fire safety is a consideration. Rockwall is also a poor conductor of heat.

Permanence—The improved gypsum core, reinforced covered nailing edges and tough cover give Rockwall unusual resistance to wear and tear. Its strength and rigidity are outstanding.

Identification—Rockwall Gypsum Wall Board can be identified by the name "Rockwall" imprinted on the edge of each sheet. (See illustration.) No markings mar either surface of Rockwall.

Sizes—Rockwall is made in sheets 48 in. wide, and in lengths of 6, 7, 8, 9, 10, and 12 ft.; ¼, ⅜ and ½ in. thick.

Finishing Joints—Rockwall Gypsum Wall Board is often paneled and joints covered with wood panel strips. If decorating requirements do not demand reinforced joints, joints can be flushed with Rockwall Joint Filler and sanded. To make sure that joints do not show after painting, papering, or applying Craftex, we recommend the use of Rockwall Fabric Joint Sealer. A special cement is used to fill the joints and a reinforcing mesh fabric pressed down firmly and evenly along joint. With the cement forced through the open mesh and edges trimmed, this system conceals the joint perfectly and greatly reduces chance of cracks showing through the decoration. Rockwall Joint Filler or Rockwall Fabric Joint Sealer with fabric and cement can be supplied with each order of wall board.

APPLICATION OF ROCKWALL GYPSUM WALL BOARD

Support for Edges—It is important that all edges be supported both longitudinally and crosswise of the framing. This means that blocking (headers) must be used where a joint is necessary.

Application Over Old Plaster—First locate all studs and joists carefully. If plaster surface is fairly straight and solid, Rockwall Board may be applied directly.

For plaster in poor condition, cut the plaster along studs and insert furring strips, bringing the face of these strips slightly behind surface of old plaster. Make furring strips plumb and straight, shimming where necessary.

Old ceilings can best be handled by nailing ordinary 1x2-in. furring across joists with 8d nails.

Be sure nails are long enough to get a good grip on stud or joist. Usually 6d nails will be sufficient.

Application over Brick and Masonry—Brick and Masonry walls should be furred with 1x2-in. strips placed 16 in. on centers. Anchor strips by plugging old walls, or on new work insert anchors or ties in the mortar joints. Be sure the furring is solidly anchored and evened up. Nail Rockwall directly to strips, placing headers to support all edges.

Finishing and Decorating—After Rockwall Boards are in place, fill the joints and spot nailheads before decoration is applied. (Where paneling strips are to be used joints may be left unfilled.)

Use Rockwall Joint Filler or Fabric Joint Sealer for filling and reinforcing the joints. Directions for application are contained in each package.

Painting—Be sure surface is smooth, clean and dry (including joints and nailheads) sandpapering where necessary. Before sizing entire surface, apply coat of primer over joints and nailheads only. When dry, apply a sizing coat or primer over entire surface, using equal parts of good grade varnish size and ready mixed paint of desired color. Allow this to dry 24 hours. Touch up flat spots, if any, and, when dry, paint with desired color.

Calcimine—Treat joints and nailheads as for paint. Apply a single varnish size, then calcimine.

Paneling—Use wood panel strips from 2 to 3 in. wide and $\frac{3}{16}$ to $\frac{5}{16}$ in. thick. Decorate before nailing on the panels. Use 6d finishing nails, spacing about 9 in. apart. Stagger the nails.

Paper—Sandpaper joints as for paint and size as for calcimine. Then apply paper.

Craftex—Be sure joints are filled carefully and reinforced with fabric. Size the taped joints with oil or varnish size. Apply and texture Craftex following standard directions of the Craftex Company, being careful not to bear too heavily with brush or texturing tool when going over the taped joints.

Filling Joint

Applying Fabric Over Joint

Smoothing Fabric into Joint Filler

CERTAIN-TEED PRODUCTS CORPORATION

GYPSUM AND FIBRE DIVISIONS

Manufacturers of a Complete Line of Gypsum Plasters, Gypsum Lath, Gypsum Wall Board and Tile, Fibre Boards

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For Our Other Products, see File Index

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QUALITY, REPUTATION AND GUARANTEE

The CERTAIN-TEED PRODUCTS CORPORATION is one of the largest producers of gypsum products in the United States, having mills with modern equipment, strategically located at practically every gypsum producing center east of the Rocky Mountains.

Architects will find this line of plasters full and complete, and this company can at all times advantageously serve its trade in all principal markets with short hauls and low freight costs.

The plasters described on the following pages have a national reputation and set a high standard as to quality, tensile and crushing strength, spreading and covering capacity, working qualities as well as fire resisting and endurance properties required by leading laboratories.

TRADE-MARKS

Guarantee

All the products listed and described herein are fully guaranteed as to quality. They will give the best results when used in accordance with the company's specifications.

GYPSUM PLASTERS—THEIR USE AND IDENTIFICATION

Many architects, builders, plastering contractors and general contractors of wide experience have shown a preference for *"Certain-teed," "Acme," "Agatite,"* and *"Beaver"* plasters wherever easy, economical spreading, uniform setting, hardness and durability of finished work, and other qualities of good plastering are desired to an exceptional degree.

For any type of building; for plastering over any approved plaster backing; for procuring any effect of finish; for any climatic conditions; for any local preference as to working characteristics, there is a *"Certain-teed," "Acme," "Agatite,"* or *"Beaver"* plaster whose superior fitness has been established by long experience.

Standardized Brands

The combined factory brands of the Certain-teed and Beaver divisions are numerous and include many that are among the best known and the most popular in the trade, but irrespective of the brand, the same high standard of quality is maintained throughout the whole line.

Architects, builders, owners and plasterers may depend upon each product made in the Certain-teed-Beaver plants to give the most satisfactory results.

Containers and Weights

Our plasters are shipped in convenient containers, prominently labeled for identification.

Paper bags contain 100 lb. each—20 bags to the ton. Also 80 lb. each—25 bags to the ton.

Wood barrels contain 235 lb. net—250 lb. gross—8 barrels to the ton. Wood kegs contain 115 lb. net—125 lb. gross—16 kegs to the ton.

Paper bags for lime contain 50 lb. each—40 bags to the ton.

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

CERTAIN-TEED PRESENTS "PLASTISIZED" PLASTERS
Always Easy Working—in the "Life Preserving" Bag

This Seal on Back of Each Bag

With One Sweep of Science Certain-teed "Plastisized" Plaster Banishes the Losses of the Old Short-Working Plaster for All Time.

The "Life Preserving" Bag with Seal

What Is "Short-Working" Plaster?

This means that the plaster has become "dead." It will not carry the proper amount of sand—and it lacks richness and plasticity. The plasterer cannot take his favorite long sweep stroke, he must push and push to get the plaster on the wall at all and still too much goes through the lath and falls as waste. Instead of spreading like butter, it's just like so much sand.

What Are the Reasons for "Short-Working" Plaster?

In the first place "short-working" plaster is not properly processed. Stored in ordinary bags under ordinary storage conditions it becomes "short-working." To make it work at all, the plasterer must cut down the amount of sand. The plastering contractor loses money in droppings and lost yardage—the craftsman finds it almost impossible to build true, strong, straight walls and you spend extra time unnecessarily in supervising to get proper results.

Now Comes "Plastisized" Plaster—Easy Working Always

You no longer have to put up with "short-working" plaster. Loss of time, of profit, of material—these are all over. With one sweep Certain-teed has banished all this grief. Ceaseless work day after day in our laboratories has now given us "Plastisized" plaster that stays fresh in any bag for many months. The plasterer can easily recognize it. Aside from its name it is easy-working *always.*

New "Life-Preserving" Bag

Certain-teed, not content alone with making new easy-working plaster, goes further—presents "Plastisized" Plaster in the new "Life-Preserving" bag. On ordinary jobs, where the material is used directly on the job, the "Life-Preserving" Bag is not necessary because the plaster will keep fresh and easy-working for months. But where dealers want to carry a more complete stock, and where plasterers want to store the "left-over" plaster from a job, the "Life-Preserving" Bag will keep the plaster fresh for a much longer period. The secret of the "Life-Preserving" Bag lies in its Scutan liner, a patented product, which is moisture-proof. It keeps the dampness out and keeps the plaster fresh.

Extra Value at No Extra Cost

Your clients can get the benefits of these two revolutionary improvements at the same cost as ordinary plaster. "Plastisized" Plaster, in the "Life-Preserving" Bag gives premiums in results without a cent extra cost. *Specify it on your next job.*

Specify Certain-teed "Plastisized" Plaster

Specify "Plastisized" Plaster—insist upon having it, so your client and you will not be deprived of one of the most modern methods of processing plaster. We want you to have all the facts about this plaster. Let us send you an illustrated book on "Plastisized" and on other plaster products, without obligation to you.

Paper Bags in Which a Few of Our Well Known Brands of Gypsum Plasters Are Shipped

"Certain-teed"

"Beaver"

"Agatite"

"Acme"

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

DESCRIPTION AND CLASSIFICATION OF CERTAIN-TEED GYPSUM PLASTERS

Gypsum Neat Plasters (Unsanded)

"Certain-teed," "Acme," "Agatite," and *"Beaver"* brands of gypsum neat plaster (sometimes called cement plaster or patent plaster) is the product of ground, calcined gypsum which is carefully selected and tested as to its plastering value, strength, hardness, resistance to heat and moisture, and other important physical and chemical properties. The word "neat," in connection with the name of the plaster, implies that the product, as shipped, does not contain sand; the sand necessary is added at the building site.

These plasters are furnished with or without a small percentage of fiber. The fibered material is used for plastering on wood and metal lath, while the unfibered is usually used for plastering on brick, tile and similar solid surfaces. These plasters, with the addition of fine sand at the site, are sometimes used for a sand float finish in place of lime putty. Any type of finishing coat may be used over the brown coat, including: Gypsum plaster finish, lime putty finish, sand float finish, Keene's cement finish, caen stone finish, etc.

Covering Capacity—The covering or spreading capacity of gypsum neat plaster depends to a large extent upon the quantity and quality of sand used, the character of base to which it is applied, and the thickness of the plaster coats. Under average circumstances gypsum neat plaster, mixed and applied in accordance with the specifications for same, and to the grounds specified will spread or cover about as follows:

One part of plaster to two parts of sand:
On gypsum lath—from 225 to 240 yards per ton.
On metal lath (expanded or wire)—from 105 to 135 yards per ton.
On wood lath—from 180 to 210 yards per ton.
One part of plaster to three parts of sand:
On gypsum tile—from 235 to 255 yards per ton.
On clay tile or brick—from 165 to 200 yards per ton.

Gypsum Ready-Sanded Plasters

"Certain-teed," and *"Beaver"* brands of gypsum ready-sanded plaster (sometimes called prepared or sanded plaster) are the product of ground calcined gypsum which is carefully selected and tested as to its plastering value, strength, hardness, resistance to heat and moisture, and other important physical and chemical properties. The expression "ready-sanded" implies that the product, as shipped by the manufacturer, contains, intimately mixed, a suitable proportion of clean, sharp, dry sand, and that it is intended to be used without the admixture of additional sand at the building site.

Gypsum ready-sanded plaster, fibered or unfibered, is used for all of the purposes where a gypsum neat plaster with sand, fibered or unfibered, can be used. The fibered material is used for plastering on wood or metal lath, while the unfibered is usually used for plastering on brick, tile and similar solid surfaces. Gypsum ready-sanded plaster is especially desirable in cases where a suitable grade of plastering sand cannot be economically procured, or during cold weather when local sand supplies are liable to contain frost.

Covering Capacity—The covering or spreading capacity of gypsum ready-sanded plaster depends to a large extent upon the character of the base to which it is applied, and the thickness of the plaster coats. Under average circumstances gypsum ready-sanded plaster, mixed and applied in accordance with specifications for same, and to the grounds specified, will spread or cover about as follows:

Plaster mixed with water only—no additional sand:
On gypsum lath—from 75 to 80 yards per ton.
On metal lath (expanded or wire)—from 35 to 45 yards per ton.
On wood lath—from 60 to 70 yards per ton.
On gypsum tile—from 65 to 70 yards per ton.
On clay tile or brick—from 45 to 55 yards per ton.

Gypsum Wood-Fibered Plasters

"Certain-teed," "Acme," "Beaver" and *"Agatite"* brands of gypsum wood-fibered plaster are the product of ground calcined gypsum, which is carefully selected and tested as to its plastering value, strength, hardness, resistance to heat and moisture, and other important physical and chemical properties.

The expression "wood fibered," in connection with the name of the plaster, implies that the product as shipped by the manufacturer, contains, intimately mixed, a suitable amount of non-staining wood fiber made by the grinding or shredding of wood. This plaster, in general, is intended to be used without the admixture of sand at the building site.

This plaster is extensively used where high fire resistance is necessary, and in some instances where sand of the desired quality is not easily obtained.

Note: Gypsum wood-fibered plaster *with but one part* of sand by weight can be used on gypsum and clay tile, brick and wood lath surfaces, and for the second (brown) coat upon gypsum lath and metal lath. It is important to bear in mind that the addition of sand to gypsum wood-fibered plaster will hasten its time of setting. *When it is intended to use sand the manufacturer should be advised so as to enable further retarding of this plaster at the mill before shipment.*

Covering Capacity—The covering or spreading capacity of gypsum wood-fibered plaster depends to a large extent upon the character of base to which it is applied, and the thickness of the plaster coats. Under average circumstances gypsum wood fibered plaster, mixed and applied in accordance with the foregoing specifications, and to the grounds specified, will spread or cover about as follows:

Plaster mixed with water only (no sand):
On gypsum lath—from 115 to 120 yards per ton.
On metal lath (expanded or wire)—from 55 to 65 yards per ton.
On wood lath—from 90 to 100 yards per ton.
Equal parts of plaster and sand:
On gypsum tile—from 180 to 210 yards per ton.
On clay tile or brick—from 150 to 170 yards per ton.

Sanded Wood Fibered Plaster

This is a plastic, easy-working wood fibered plaster containing specially graded fine sand. It is often used for small patching jobs and in markets where plasterers prefer a sanded wood fibered plaster.

Bond Plaster for Concrete Surfaces

"Certain-teed," "Acme," "Agatite" and *"Beaver"* brands of bond plasters are made for direct application on interior concrete surfaces. Requires the addition of water only to prepare it for use, and its cohesive and adhesive properties make it an ideal plaster base and bonding coat on interior concrete surfaces.

Prepared Finishing Plasters

"Certain-teed," and *"Beaver"* brands of prepared finish plasters are designated as *Sand Float* and *Prepared Trowel Finish.*

Sand Float—A prepared sanded finish to be used with the addition of water only.

Prepared Trowel Finish—A prepared finish to be used instead of ordinary lime putty finish. Ready for use with the addition of water only.

Covering Capacity—The covering or spreading capacity of gypsum finishes depends upon the condition of the surface or base coat of plaster to which the finishing coat is applied, and the thickness of the finishing coat. Under average circumstances gypsum finish plasters, mixed and applied in accordance with specifications, will spread or cover about as follows:

Gypsum Prepared Trowel Finish—from 350 to 400 yards per ton.

Gypsum Sand Float Finish—from 250 to 275 yards per ton.

Finishing and Gauging Plasters for Use with Lime Putty

"Certain-teed," "Acme" and *"Beaver"* brands of gauging plasters are made from carefully selected gypsum rock which is unexcelled for its purity and adaptability for manufacturing the highest grade finishing plaster. They are uniformly ground to the exact fineness for a finishing plaster to mix freely and quickly with lime putty.

Satin Spar Finish—A white, retarded calcined gypsum made from a selected high purity gypsum rock. It is specially prepared for mixing with hydrated finishing lime on the job. One measure of dry finish to three measures of lime putty will set in about one-half hour to a smooth, pure white, flawless surface of uniform texture. Unless a particularly slow set is desired, the addition of retarder is unnecessary.

The natural snowy whiteness of a finish made with Satin Spar forms a distinctive wall surface for hospitals, schools and all public buildings where an immaculate atmosphere and strictest sanitation are required.

Blue Rapids Gauging Plaster—This is an unretarded calcined gypsum used in gauging lime putty finish. It provides the same beautiful glass-like finish as Satin Spar Finish. The difference between these two plasters lies in the fact that Blue Rapids Gauging Plaster usually requires a small amount of commercial retarder on the job. Blue Rapids Gauging Plaster is preferred to Satin Spar Finish in certain sections where the plasterers are accustomed to doing their own retarding of the lime putty finish.

Keene's Cement

A superior, pure white Keene's cement for high grade work, where an extremely hard material and very smooth surface is desired. Used on extra fine finished columns, pilasters, wainscoting, imitation tile bases, etc.

WHITE MOLDING AND CASTING PLASTERS

Sunflower Molding and Casting Plasters

These plasters have established a leading place as a decorative plaster medium in architectural fields. Such distinctive, outstanding, beautiful effects are obtained each year with this exceptionally fine plaster that the names "Sunflower Molding" and "Sunflower Casting" plasters have become famous among architects, contractors and workmen.

Sunflower Molding and Sunflower Casting Plasters are smooth working, pure white products made from a selected high purity gypsum rock (99.2% pure) and are ground exceedingly fine. When mixed to the ordinary consistency for molding and casting, work will set in from 15 to 25 minutes under usual application or job conditions. These plasters obtain unusual qualities from special manufacturing processes which insure that when mixed to a pouring consistency with water, the resulting set plaster has exceptional strength. Repeated tests have shown that the set dry casts, so made, have a tensile strength of at least 500 lbs. per sq. in., and a compressive strength of more than 2500 lbs. per sq. in. When mixed to a thick pouring consistency, the set dry casts will develop a tensile strength of about 375 lbs. per sq. in., and a compressive strength of about 2000 lbs. per sq. in. If mixed to a thin pouring consistency, the resulting set and dry casts will have a tensile strength of about 250 lbs. per sq. in., and a compressive strength of about 1600 lbs. per sq. in.

Sunflower Molding and Casting Plasters are given a special treatment during manufacture which insures that casts made from these plasters are exceptionally free from voids, air holes or surface defects. This feature is a decided advantage when the plaster is used for casting a delicate, ornamental base because the absence of voids leaves a smooth unpitted surface to receive the decorative treatment.

Sunflower Molding Plaster and Sunflower Casting Plaster are suitable for all kinds of casting work particularly for the casting of plaster articles in glue molds. They are used extensively for this purpose in many of the largest and best known casting shops. They possess "cool working" properties which assure a maximum life of the glue molds. Properly mixed and poured the high purity and the special manufacturing properties insure smooth uniformly textured pure

white casts, free from large voids and possessing great strength, density and hardness. The extremely fine ground results in a slurry of soft creamy consistency and the finest details of the mold are reproduced in the finished cast.

In hundreds of theatres, public auditoriums, hotels, and palatial lobbies, and in other beautiful buildings throughout the country are found outstanding examples of artistic ornamental plastering achieved with Sunflower Molding Plaster and Sunflower Casting Plaster. These gypsum plasters are used successfully for ornamental decorative relief and run work. They are excellent plasters for marble setting and thousands of tons have thus been used.

Sunflower Molding and Sunflower Casting Plasters are also used for making molds for terra cotta and artificial stone. Their great strength, density, and hardness are of decided advantage for such purposes. They are also often used for gauging lime putty for a white finish coat when an unusually smooth white finish is desired for the interior walls of a building. These plasters can also be mixed with finishing lime and in this way beautiful textured finishes may be obtained at much less than the usual cost. Sunflower Molding and Casting Plasters have many other uses and may be used wherever a quick setting pure white gypsum plaster is desired.

A similar product can be furnished under the "Certain-teed" or "Acme" brands.

Statuary Casting Plaster

Statuary Casting Plaster is manufactured under a special process using Sunflower Casting Plaster as a base and treated with certain ingredients so that the resulting casts when dry have a superior hardness which cannot be scratched or marred by ordinary usage. This surface hardness is almost equal to that of Keene's Cement. The process and the ingredients used to manufacture Statuary Casting do not disturb the easy mixing properties or the proper setting time, which are in every respect equal to our Sunflower Casting. For this reason this material is ideal for ordinary casting shops for the manufacture of statuary, toys, animal casts and other specialties. On account of the extreme surface hardness of the dry cast, it is absolutely necessary to trim the castings made from Statuary Casting while they are still green or wet, otherwise trimming or sandpapering is difficult.

Another advantage of the surface hardness of this material is that it can be decorated without a coat of sizing. If a size coat is desired in order to obtain a more perfect finish, we recommend that the sizing material be diluted so that a very thin film is deposited on the surface. Statuary Casting is really a composition plaster and it can be used for the manufacture of fireplaces, mantel pieces, artificial travertine, grilles, plaques, etc.

Different pigments can be easily mixed with this material, obtaining very uniform color free from streaks and blotches.

This product is an excellent composition plaster because it is pure white, does not work gummy nor is the surface of the dry cast sticky.

Statuary Casting Plaster is available under "Certain-teed," or "Beaver" brands.

Certrock (A Super-Casting Plaster)

A casting plaster of far greater strength, hardness, and density than anything heretofore made from calcined gypsum. When mixed at a water-plaster ratio of 2 parts of water to 5 parts of Certrock by weight, a pouring consistency will be obtained that will readily fill out the most minute details of a mold. The resulting dry cast will have a tensile strength of approximately 800 lbs. per square inch and a compressive strength of approximately 7,000 lbs. per square inch. Thus, Certrock develops a much greater strength than Neat Portland Cement or concrete. The dry Certrock cast has an intensely hard surface that cannot be readily scratched and which cuts with difficulty even with a steel knife. It has the same quick setting properties as ordinary casting plaster and can be cast in any type mold that is suitable for ordinary casting plaster. The strength of the wet plaster is greater than that of an ordinary molding plaster cast when completely dry. The casts are of a natural gray stone color.

BASIC SPECIFICATION FOR LATHING AND PLASTERING

For the Lathing and Plastering of a Building of any Type of Construction—Using Certain-teed, Acme, Beaver or Agatite Neat Gypsum Plaster, to be Sanded at Building

Notes: This specification is arranged to cover an installation of plaster on all types of lath and masonry surfaces. After various paragraphs will be found interpolated notes—which offer information and suggestions. Notes included in ( ) refer directly to preceding paragraph.

Following this specification will be found general notes in explanation of various provisions of the specification which are referred to in the interpolated notes.

Alternate specifications are suggested and will be found in small type in [ ] inserted after the proper clauses or section of the main specification paragraphs.

Note for Specification Writer: When writing a specification for a project at hand it is only necessary to use the paragraphs that cover the type of construction contemplated. It may be necessary to slightly revise certain paragraphs to fit the individual requirements.

I. General

(a) The General Conditions of this specification are hereby made to constitute a part of the specification for Lathing and Plastering.

(See General Notes at end of specification, Pars. (e), (f) and (g).)

(b) The contractor for plastering shall furnish all materials, labor and scaffolding necessary to completely finish the building in accordance with the intent of the drawings and of the specifications.

(c) The contractor for plastering shall examine all walls, furring, partitions, ceilings, etc., and see that same are in every case secure, true, and plumb or level. He shall report any which are not so to the General Contractor for correction before proceeding to apply any lath, or plaster, on same. Failure to so report shall be taken as assumption of full responsibility for satisfactory conditions by the plastering contractor.

(For frame buildings all exterior and interior studding, all furring, joists, rafters, collar beams, etc., will, of course, be specified under Carpentry where it is assumed they will be required to be placed properly and on the centers mentioned under General Notes, paragraph (d)—namely: 16 in. for joists and studs and 24 in. for rafters and collar beams.)

II. Extent of Work and Exceptions

(a) Unless otherwise specified and indicated on the drawings, the entire interior of the building shall be lathed and plastered or plastered on masonry, as hereafter specified.

(If any plastering is to be included in an out building or elsewhere, it should be mentioned in Par. (a) unless to be separately contracted for.)

(The drawings should distinguish between furred and unfurred masonry and the specifications for Masonry, Carpentry, etc., should likewise provide for the furring or studding out where installed. See General Notes Par. (c). If there are no masonry walls to be plastered, strike out reference to same in Par. (a).)

(b) The plastering shall be the best three coat work on all lath and two coat elsewhere. The scratch and brown coats shall be carried down to the rough floor back of all bases, etc., and extended up on all walls of skylights, light wells, etc., unless otherwise provided under *Exceptions.* On ceilings or other surfaces where there are no grounds, the thickness of the lath and plaster shall equal the full thickness of the grounds specified for that lathing material.

(c) The wall surface in back of all tile wainscoting for walls shall be plastered with a scratch coat of cement mortar, consisting of 1 part Portland cement and 3 parts sand.

(In certain localities labor jurisdiction has allotted the scratch coat to the tile setters, in which case Par. (c) should be omitted. In this connection the "Basic Specification for Tilework" of the Associated Tile Manufacturers will be found very useful—2nd Edition 1924.)

(d) **Exceptions**—The only places not to be plastered are (list here locations) and all other spaces marked "not plastered" on the drawings (or, listed in schedule on drawings). No plastering will be required back of (list here such items as, marble, tile and brick wainscoting, etc.).

(In locations where the scratch coat in back of tile wainscoting or wall is conceded to the plasterers, the reference to tile in the list of exceptions should be omitted.)

III. Furring

Notes: For frame buildings the wood furring or wood suspended ceilings, to receive lath and plaster, should be included in the Specification for Carpenter Work.

For metal furring or metal suspended ceilings, see Standard Specifications issued by Associated Metal Lath Manufacturers, Inc., which cover all types of metal supports, furring, arches, beams, cornices and suspended ceiling construction. When the desired type of construction has been selected, the paragraphs should be inserted in this section of the Specification—(III Furring).

Masonry furring consisting of various types of hollow fireproof blocks or tiles, etc., is of course included in the specification for Mason Work.

IV. Lathing and Preparation of Surfaces

Gypsum Lath ("Plaster Board")

(a1) Lath with Gypsum Lath (Plaster Board) all studs, joists, etc., and all furred masonry throughout all portions of the building specified to be plastered.

(b1) All Gypsum Lath shall be Certain-teed or Beaver Gypsum Lath, ⅜ (or ¼, or ½) in. thick. Nailing edges shall have bearing not less than ⅝ in. on studs, joists, etc., with horizontal joints in walls and joints at right angles with ceiling joists broken at each board and with vertical joints on opposite sides of partitions not on the same studs. Nails shall be 3d or lathing wire nails, set not more than 6 in. apart into center joists and studs and 3 in. apart on edges of boards and shall be driven home. The center of the board shall be nailed first. The spaces between boards shall be well filled with mortar, either by pointing the joints with quick setting neat mortar before the first coat of plaster is applied, or by pressing mortar used for the first coat well into the joints when first coat is applied.

(c1) Wherever any gypsum lathed walls, partitions or ceilings abut unfurred masonry, secure strips of painted expanded metal lath extending at least 8 in. on to gypsum lath and 8 in. on to masonry. Strips shall be cut from lath weighing not less than 2.5 lb. per sq. yd.

(d1) All ground for gypsum lath shall be seven-eighths (⅞ in.) inch thick and will be furnished and installed as specified under Carpentry. Thickness of grounds includes the thickness of the lath.

(Provisions for the furnishing and setting of all grounds should be made under Carpenter's Work.)

On Gypsum Lath

(a2) *First or Scratch Coat*—(Same as Par. VIII (a1) for Wood Lath).

(b2) The boards shall not be wetted before plaster is applied. First coat shall be thoroughly applied and the plaster worked well into the joints and the surface shall be scratched or scored to provide a bond for the second coat.

(c2) *Second or Browning Coat*—(Same as Par. VIII (c1)).

(d2) Second coat shall be applied when the first coat is set firm and hard but before it is dry. Second coat shall be straightened, keeping back sufficiently from the grounds to allow for finishing coat and the surface shall be broomed or otherwise roughened to receive the finishing coat.

Wood Lath and Lathing

(a3) Lath with wood lath all studs, joists, etc., and all wood furred masonry walls throughout all portions of the building specified to be plastered.

(In cases where any masonry is to be plastered direct or where exterior walls are entirely of frame, paragraph (a) above or in the specifications for "Gypsum Lath" or "Metal Lath" should be modified accordingly.)

(b3) Wood lath shall be of good merchantable quality, non-staining, and free from loose knots. All lath shall be spaced not less than ¼ in. nor more than ⅜ in. apart and shall be laid at right angles to supports. All ends of lath shall have solid bearing and all lath shall be well nailed to each support with 3d lathing nails. A space of ¼ in. shall be left between abutting ends of lath. Joints shall be broken not more than every seven laths. No lath shall be carried through from one room to another.

(In some cases this specification for wood lath may not be considered sufficient and the architect should revise paragraph (b3) in accordance with the Standard Grading Specifications issued by the Lumber Manufacturers Association functioning in the locality where the work is situated.)

(c3) Over any heat pipes concealed in walls or partitions, furnish and install strips of gypsum lath at least ¼ in. thick or painted expanded metal lath or wire lath well secured, with good bearing, at nearest supports. Wherever any wood-lathed walls, partitions or ceilings abut unfurred masonry secure strips of painted expanded metal lath extending at least 8 in. on to wood lath and 8 in. on to masonry. Strips shall be cut from lath weighing not less than 2.5 lb. per sq. yd.

(In some localities it is customary to specify the lathing-in of heat pipes as a part of the heating contractors' work in which case provide accordingly and modify this paragraph. When gypsum lath or metal lath is specified, this paragraph should be stricken out.)

(d3) Over the heating plant in basement and extending 3 ft. beyond the outlines of same, and of smoke pipe to wall, furnish and securely install gypsum lath ⅜ in. thick or painted expanded metal lath or galvanized wire lath weighing not less than 3.0 lb. per sq. yd.

(The Committee on Building Construction of the National Fire Protection Association recommend the protection of woodwork over heating apparatus and over fuel storage (other than anthracite). The above paragraph is suggested as a minimum.)

(e3) (See note following.)

(For other uses of incombustible lath, if any are desired to replace wood lath in special locations, describe in this space.)

(f3) All grounds for wood lath and lathing shall be three-quarters (¾ in.) inch thick and will be furnished and installed as specified under Carpentry. Thickness of grounds includes the thickness of the lath.

(Provisions for the furnishing and setting of all grounds should be made under Carpenter's Work.)

Metal Lath

(a4) Lath with metal lath, all wood studs, joists, etc., back of all tile wainscoting (or, walls), and all furred masonry walls (or, all steel studs, beams, metal furring, metal suspended ceilings, etc.) throughout all portions of the building specified to be plastered, including all arches, beams, cornices, etc.

(b4) *For Walls, Furring and Partitions with Wood (or Steel) Supports Spaced 16 in. or Less on Centers.* Painted expanded metal lath weighing not less than 4.5 lbs. per sq. yd. shall be used.

For Ceilings with Wood Joists (or Wood Furring) (or Metal) Spaced 16 in. or Less on Centers. Painted expanded metal lath weighing not less than 3.0 lb. per sq. yd. shall be used.

For Ceilings with Wood Joists, Rafters or Collar Beams (or Wood Furring) (or Metal Furring) Spaced 24 in. on Centers. Painted expanded metal lath of the rib type weighing not less than 3.5 lb. per sq. yd. shall be used.

(c4) Metal lath shall be applied with the long dimension of the sheet across the supports. Sheets shall be lapped at sides not less than ½ in. and at ends not less than 1 in.

(d4) Sheets shall be attached to wood supports by not less than 6d nails or by 1¼ inch No. 14 gauge wire staples; either of these shall be driven to a penetration of not less than ⅞ in. and be spaced not to exceed 6 in. on centers. Nails shall be driven on a slant, alternating the slant of adjacent nails, and be bent over at least one strand of the lath.

Note: For fireproof building the following paragraph [d4a] should be used instead of paragraph (d4).

[d4a] Sheets shall be wired to all metal supports at intervals not exceeding 6 in., with not less than No. 18 gauge galvanized soft annealed wire.

(e4) All horizontal laps of sheets on sidewalls shall be tightly tied at least once between supports, and side laps on ceilings shall be tied twice between supports, with No. 18 gauge galvanized soft annealed wire.

End laps shall generally occur only over supports; if between supports, sheets shall be securely laced every 6 in. with wire just described. At internal angles the lath on one wall shall be extended on the adjoining wall not less than 15 in. beyond the corner (to the nearest support).

(f4) Wherever any walls, partitions or ceilings abut unfurred masonry the metal lath shall be extended at least 6 in. onto the masonry and be well secured at the edges into the joints.

(g4) All grounds for metal lath shall be three quarters (¾ in.) inch thick and will be furnished and installed as specified under Carpentry.

(Provisions for the furnishing and setting of all grounds should be made under Carpenter's Work.)

Other Lathing Backgrounds

Various types of woven wire lath, welded wire meshed materials and wood, with and without paper backgrounds, and other special patented lathing materials are on the market. No attempt is made to provide for these in this specification. When their use is considered, the manufacturer's data should be consulted.

Masonry Surfaces

Provision should be made under "Masons Work" for all joints to be rough struck in brick, hollow tile, gypsum or concrete block walls which are to be plastered direct.

(a5) The surfaces of all unfurred masonry to be plastered shall be brushed clean with a wire brush and shall be free from oil, grease, soot or projecting mortar.

(b5) Any low places shall be filled out and any unevenness of walls shall be straightened with unfibered plaster ahead of the base coat.

(c5) All grounds for brick, hollow tile and concrete block walls shall be five-eighths (⅝ in.) inch thick, and one-half (½ in.) inch thick for gypsum partition tile. Grounds will be furnished and installed as specified under Carpentry.

(When any of the masonry materials mentioned above are not to be used in the building being specified, the reference to same may be stricken out.)

V. Corners, Angles, etc.

(a) Furnish and securely set at all external or projecting angles a stiff galvanized metal corner bead, the same to run from top of base to ceilings, heads or beams, or to spring-lines in the case of any arches.

(If the architect's experience warrants a preference for any particular corner bead, its name can be inserted. If it is desired to have chamfered or rounded corners, strike out reference to corner beads and insert a new paragraph accordingly—and add the "cornerite" of metal lath mentioned in the following paragraph (b).)

(b) In all vertical internal or re-entrant angles and in all angles between ceilings, soffits, and walls, partitions or furring, lightly attach, over the wood lath, "cornerites" made from strips of painted expanded metal lath cut 12 in. wide from sheets weighing not less than 2.2 lb. per sq. yd. and bent into the shape of an "L" 6 in. on each side. "Cornerites" shall be fastened along each edge but shall not be fastened in the corner. All these angles shall be plastered square and straight.

(This reinforcement of angles by metal lath "cornerite" will tend to prevent or reduce cracks in the angles. When gypsum lath is specified, change the words "wood lath" to "gypsum lath." When metal lath is specified this paragraph should be stricken out.)

VI. Metal Base Screeds or Grounds, Picture Moulds, etc.

Notes: Special metal, base screeds, grounds, moulds, coves; complete metal bases with or without electric wire-ways; metal picture moulds, chair rails, door and window trim, etc. Where such items are desired they should be included in the proper trade specification as required by local trade jurisdictions.

Where the installation of any or all of the above products will cause special conditions or requirements in the plastering or lathing work, suitable paragraphs should be inserted in this section of the specification under a suitable heading.

VII. Materials and Mixing

Plaster

(a) All base plaster shall be Certain-teed or Beaver Gypsum Neat Plaster and all finishing plaster shall be Certain-teed or Beaver Gypsum Finishing or Gauging Plaster as manufactured by the CERTAIN-TEED PRODUCTS CORPORATION, or other plaster if approved in writing by the architect.

(If other than the types of Certain-teed or Beaver plaster on which this specification is based are to be used modify Par. (a) accordingly.)

Sand

(b) All sand for base coats shall be clean and sharp, free from alkali, salt or quicksand, and from objectionable amounts of loam or clay and shall be graded from fine to coarse, and when dry all shall pass a No. 4 sieve, not more than 10% by weight shall be retained on a No. 8 sieve, not more than 80% nor less than 15% by weight shall be retained on a No. 30 sieve, not more than 95% nor less than 70% by weight shall be retained on a No. 50 sieve, and not less than 95% by weight shall be retained on a No. 100 sieve. These sieves shall meet the specifications given in the Bureau of Standards' Standard Screen Scale (see American Society for Testing Materials, Specifications for Gypsum Plastering Sand, Serial Designation C35-30).

(If any sand float finish is to be included (see Finishing Coat, Pars. VIII (b5) and [b5a]) the sand for same should be specified in Par. above.)

Mixing

(c) All plaster shall be mixed with clean water in clean, tight boxes or in machine mixers specifically manufactured for this purpose and in accordance with best local practice, the intent of these specifications, and the directions of the maker on file in the office of the architect.

(Mixing and the importance of clean water and directions of the maker are of vital importance to good work.)

VIII. Proportions and Application

The specification below is for plaster of the regular thickness of the grounds applied in three coats.

In some parts of the country and under certain conditions, plaster is applied to the thickness of the grounds in two coats. Provision is therefore made at the end of this section VIII for such plastering under the heading "Two-coat Work."

Base Plaster on Wood Lath

(a1) First or Scratch Coat shall be one part fibered plaster, to not more than two parts, by weight, of dry sand.

(b1) Wood lath shall be thoroughly wetted 12 to 24 hours before plastering is started. First coat shall be applied with sufficient pressure to fill all spaces between lath and obtain good key, leaving a light coat over the lath and the surface shall be scratched or scored to provide a bond for the second coat.

(c1) *Second or Browning Coat* shall be one part plaster, fibered or unfibered, to not more than three parts, by weight, of dry sand.

(d1) Second coat shall be applied when the first coat is set firm and hard but before it is dry. Second coat shall be applied with strong pressure and straightened to a true even plane. The surface shall be broomed or otherwise roughened to receive the finishing coat.

On Metal Lath

(a2) *First or Scratch Coat*—(Same as Par. (a1) above for Wood Lath).

(b2) First coat shall be applied with sufficient pressure to fill all meshes and obtain good key, leaving a light coat of plaster over the lath and the surface shall be scratched or scored to provide a bond for the second coat.

(c2) *Second or Browning Coat*—(Same as Par. (c1) above for Wood Lath).

(d2) Second coat shall be applied when the first coat is set firm and hard but before it is dry. Second coat shall be applied with strong pressure and straightened, keeping back sufficiently from the grounds to allow for finishing coat and the surface shall be broomed or otherwise roughened to receive the finishing coat.

Base Plaster on Masonry

(a3) *Base Coat* shall be one part plaster, unfibered, to not more than three parts, by weight, of dry sand.

(b3) The surface of all unfurred brick, hollow tile or concrete block walls shall be wetted before plastering is begun when necessary to kill excessive suction. The plaster shall be applied to a thickness of ⅝ in. beyond the wall face in two operations. A thin layer shall first be applied with strong

pressure to secure a good bond and shall be followed immediately with a second layer which shall be straightened to a true, even plane. The surface shall be broomed or otherwise roughened to receive the finishing coat.

(Provision is not made in the above specification for plastering on rubble masonry or on poured concrete. The first it is presumed will never be done without furring and the latter is covered in the following paragraphs.)

Base Plaster on Poured Concrete

All concrete surfaces which are to be plastered, should be put in condition to receive and retain the plaster coats.

(a4) All concrete surfaces to be plastered shall be treated as follows: Remove with a wire brush all dust and loose particles. Grease, oil or efflorescence shall be washed off with a solution of one part of commercial muriatic acid to four parts of water, and the surface so treated, washed again with clean water.

(b4) Smooth and dense surfaces shall be hacked so as to provide a rough base or background for the plaster. Plastering upon smooth concrete surfaces, which are first covered with so-called waterproof paints or compounds will not be allowed.

(c4) *Base Coat* shall be Certain-teed or Beaver Concrete Bond Plaster used neat with only the addition of water. The base coat shall consist of one or more thin coats sufficient to straighten the walls and ceilings and shall be applied with great pressure to secure a good bond. If necessary to apply in two coats, double back with the same material. The plaster shall be not less than ⅛ in. nor more than ⅜ in. in thickness, exclusive of the finish coat. The surface of the base coat shall be broomed or otherwise roughened to receive the finishing coat.

(If Bond Plaster is to be used as specified above, revise Par. 7 (a) to include the name of manufacturer and brand.)

Finishing Coat

(a5) *Smooth White Finish* shall be one measure of dry gauging plaster or gypsum finishing plaster to not more than three measures of finishing lime putty thoroughly and uniformly mixed. If lump lime is used it must be perfectly slaked. Hydrated lime should be soaked for 24 hours before using.

If it is desired, a prepared gypsum finishing plaster may be used for the smooth white finishing coat in which case substitute the following paragraph and revise Par. VII (a) accordingly.

[a5a] *Smooth White Finish* shall be Prepared Gypsum Finishing Plaster mixed to the proper consistency with clean water only.

(b5) Finishing coat shall be applied throughout the building except behind base and any place under *Exceptions* in Par. II (d) and shall be smooth white finish troweled to a dense true surface.

Note: If "Sand Float Finish" is desired in some locations instead of "Smooth White" add the following paragraph after, at end of Par. (b5), noting the exceptions and giving the locations.

[b5a] *Sand Float Finish* shall be four measures Gypsum Cement Plaster unfibered, one measure of perfectly slaked fresh burned plasterers' lump lime putty or standard finishing hydrated lime and five measures of clean sharp sand. A prepared sand float finish may be used. This requires only the addition of water.

(c5) (See note following.)

Note: This specification does not contemplate that colored, textural or special effects will be required as a finish in any portion of this building. If so, insert here the required paragraphs giving the location and description.

(d5) Finishing coat shall be applied when the base coat is set firm and hard and nearly dry. The surface of the base coat shall be sprinkled with water before the finish coat is applied when necessary to kill excessive suction.

(e5) All finishing coats throughout shall be applied and finished in the most workmanlike manner and shall be left plumb or level and true and even planed, free from trowel marks, blotches and without joints showing.

(f5) All finished plastering shall be protected from wind until set. In freezing weather, the contractor shall arrange with the General Contractor that plastering shall be protected from frost until set hard and thoroughly dry.

(In windy hot dry weather openings should be screened but not closed. In all clear weather after plastering has set, doors and windows should be kept open as fully as possible.)

Two-coat Work

For cautionary notes regarding "Two-coat Work" and its undesirability on certain backgrounds read the following:

Circular No. 151 of the Bureau of Standards entitled "Wall Plaster, Its Ingredients, Preparation and Properties" states in part regarding two-coat work:

" 'Doubled-up', 'laid-off', or 'laid-on' work, as it is variously called in different localities, means the application of the scratch and brown coats together, or at least without permitting the usual time to elapse between them. The scratch coat is applied in the way specified above, but it is not permitted to harden, nor is its surface scratched. The application of the brown coat is started immediately after finishing the application of the scratch coat. This method is obviously cheaper than straight three-coat work, but certain precautions are essential to its successful use. The brown coat must be applied before the hardening of the scratch coat has progressed far enough to produce a glazed surface. The backing must be sufficiently rigid of itself that it will not yield under pressure of the trowel, and will not sag under the weight of the combined coats. If it deflects to any appreciable extent, the keys which hold the scratch coat to it will probably be broken, and if it sags, it will be found extremely difficult to bring the brown coat out to a true plane surface. For these reasons, doubled-up work shall not be applied to metal lath. Its use on wood is not recommended, particularly if the plaster is to be ⅞ in. thick. On masonry backings the use of doubled-up work is largely a question of application—if the plasterer succeeds in making the plaster stick and is able to form a true and plane surface, the work will be satisfactory. This depends on the thickness of the plaster and the nature of the backing. It is difficult to apply a doubled-up coat of a thickness greater than ⅝ in. The great suction exerted by gypsum tile makes the application of doubled-up work easy; on clay tile it is almost impossible."

Two-coat Work on Gypsum Lath

For two-coat work on "Gypsum Lath" specify as follows substituting the proper paragraphs as noted:

(a6) (Same as Par. VIII (a1)).

(b6) The boards shall not be wetted before plaster is applied. Base coat shall be applied in two operations—a thin layer of plaster shall first be spread under pressure over the boards and the plaster worked well into the joints. This shall be immediately followed with a second layer which shall be straightened to a true and even plane keeping back sufficiently from the grounds to allow for the finishing coat. The surface shall be broomed or otherwise roughened to receive the finishing coat.

(c6) *Finishing Coat*—(Same as Pars. VIII (a5) to (f5)).

Two-coat Work on Wood Lath

If "two-coat work" on wood lath is desired, specify as follows substituting the proper paragraphs as noted.

(a7) (Same as Par. VIII (a1)).

(b7) Wood lath shall be thoroughly wetted 12 to 24 hours before plastering is started. Base coat shall be applied in two operations—a thin layer of plaster shall first be applied with sufficient pressure to fill all spaces between lath and obtain a good key and shall be followed immediately with a second layer which shall be straightened to a true even plane. The surface shall be broomed or otherwise roughened to receive the finishing coat.

(c7) *Finishing Coat*—(Same as Pars. VIII (a5) to (f5)).

Two-coat Work on Masonry

(a8) For two-coat work on brick, hollow tile or concrete block walls, same as Pars. VIII (a3) and (b3).

(b8) *Finishing Coat*—(Same as Pars. VIII (a5) to (f5).)

IX. Arches, Beams, Cornices, Moldings, etc.

(a) Wherever any arches, beam effects, corbels, etc., are indicated on the drawings, the same shall be fully formed with plaster in strict accordance with detailed drawings. All to have sharp arrises.

(If arches, beams, etc., are to be included, they will, of course, be specified to be built or formed by the Carpenter for wood frame construction. If not they should be built of metal lath and fully described in Par. IV (a4). If more ornamental features are intended, amplify. If not to have sharp arrises, change to chamfering or rounding.)

(b) Wherever any cornices, moldings or other ornamental plastering features are shown or indicated on the drawings, they shall be run straight and true, as detailed, with Certain-teed or Beaver American Molding and Casting Plaster, or may be precast, securely set and anchored without joints showing. All moldings and lines shall make true intersections and be neatly mitered at angles. The girths of cornices and sizes of molds shall be as follows:

(Here allocate and describe) .....

(If no cornices, moldings, etc., are to be included, strike out this section in specification. If to be included, and if large enough in girth or size to require forms, mention the same for cornices, beams, etc., in Carpenter's Work or Metal Furring and Lather's Work.)

X. (Blank Heading)

(This space is suggested so that the architect may include provisions for plastering of window jambs or reveals where not of wood, any special plastering or finishing in toilet rooms, bathrooms, kitchens or laundries,

etc., the plastering of any out building, any "waterproofing," etc., and clauses regarding guarantee or conduct of work or such other special items as may apply to the particular structure in hand which are not provided for under other headings.)

XI. Patching and Completion

(a) The contractor for plastering shall at all times keep the premises clean of loose mortar and rubbish resulting from his work and shall neatly patch or otherwise make good any damaged plaster after the various trades have left the building.

(It has been found in practice and as a matter of justice that both patching and waste can be avoided if provision is made for the plastering contractor to be paid for patching by the trade causing the damage. This paragraph can be amplified as desired by the architect to conform to his experience or trade custom of the locality.)

(b) The whole of the work shall be completed to the satisfaction of the architect and all shall be left perfectly straight, true and level or plumb, free from waves, cracks, blisters and defects of any kind, or be replaced until it is.

XII. Stucco

(If any exterior plastering is to be done, here enumerate and describe.)

(For exterior plastering, or Stucco, the Specifications for Lime Stucco of the National Lime Association and for Cement Stucco of the Portland Cement Association will be found very useful.)

General Notes Regarding the Provisions of the Preceding Basic Specification

(a) This specification, if used as herein given, will provide for all lathing and plastering required to make a complete interior "job" in a building of any type of construction, as follows:

Furring Lath—Wood throughout, except over heating pipes, heater, etc. Metal furring and lath throughout.

Corners—Metal corner beads.

Angles—Metal lath strips, or "cornerites."

Masonry Walls—Furred and unfurred.

Base Coat Plaster on Lath—

First Coat—Certain-teed, Acme, Beaver or Southern Neat Gypsum Plaster, fibered.

Second Coat—Certain-teed, Certain-teed Acme, Beaver American or Southern Neat Gypsum Plaster, unfibered.

Base Coat Plaster on Unfurred Masonry—One coat Certain-teed, Certain-teed Acme, Beaver American or Southern Neat Gypsum Plaster, unfibered (in two applications).

Base Coat Plaster on Poured Concrete—Certain-teed, Acme, Beaver or Southern bond plaster.

Sand—As specified, added to scratch coat or base coat plaster at the site.

Finishing Coat—

Smooth White Finish—Certain-teed, Acme, or Beaver Finish, or Satin Spar Finish or Blue Rapids Gauging Plaster used with lime putty, or Prepared Gypsum Finishing Plaster.

Sand Float and Trowel Finishes—Certain-teed, or Beaver, Sand Float Finish.

(b) It has been the aim to so prepare this specification as to include all items which might be required in any kind of a building and yet to eliminate in-so-far as possible all extraneous matter from the specification proper. Through this means and the interpolated notes it is hoped that the time in research and writing required of the architect and in examination by the plastering contractor will be reduced to a minimum. To carry out this idea and to make possible the reference to it as a standard to be followed, the Basic-Specification definitely calls for certain materials and finishes, as listed above. To meet conditions when these provisions do not apply, specifications for plaster board, now better known as gypsum lath, and for metal lath and for various types of plaster finishes are included, also interpolated notes so that the architect may rewrite into his own specification those paragraphs descriptive of the work he desires to incorporate in the particular building at hand.

(c) It is the intent of the compilers of this specification and notes to suggest that which they cannot cause to be a requirement, namely; that the interior of all exterior masonry walls be furred with either fireproof tile blocks or wood furring according to type of construction. In a wood frame building the masonry of interior chimneys and fireplace backs, etc., should be studded out and that chimney breasts, etc., be studded out or furred. The drawings of the architect and the provisions in his specification under Carpentry, Masonry and Metal Work or Fireproofing will control such feature.

(d) In this specification for lathing and plastering it is assumed that the joists and studding—and the furring strips in the case of masonry walls—and the fireproof tile furring blocks, etc.—will be specified elsewhere in the architect's specification under the proper trade and will be satisfactorily and securely placed. Any wood rafters and collar beams, where plastering occurs, are assumed to be set 24 in. o.c., and floor joists and studding, set 16 in. o.c.

(e) This specification does not include General Conditions (except by reference) or items relative to administrative matters such as usually form the first part of an architect's specification. In such items would be included fire, compensation, liability or other insurance, watchman service, if any, and the use of hoists, water, telephone, temporary heat and light, and storage, etc.

(f) Attention is called to this fact in order that, in the absence of an Architect's General Conditions pro-rating such items, the plastering contractor may arrange for the proper disposition of them with the owner when the contract is direct or with the General Contractor when his status is that of a sub-contractor.

(g) The use of the "General Conditions" and other Standard Documents of the American Institute of Architects is recommended to architects and plastering contractors and to the latter especially, the "Standard Form of Sub-Contract," a form of agreement between the General Contractor and the Sub-contractor. The items mentioned in the two preceding paragraphs are, however, only covered in a general way in the "Standard Form" of the A.I.A.

GYPSUM LATH FOR GYPSUM PLASTERING

Certain-teed and *Beaver* Gypsum Lath are made from gypsum rock plaster and faced with tough fiber surfacings front and back. Millions of tiny air cells, embedded in the gypsum base by a special process, greatly increase the natural insulating properties of gypsum.

Certain-teed and *Beaver* Gypsum Lath is available in the following sizes:

Unbundled:

¼ in. x 32 in. x 36 in.
¼ in. x 32 in. x 48 in.
½ in. x 32 in. x 36 in.
½ in. x 32 in. x 48 in.
⅜ in. x 32 in. x 36 in.
⅜ in. x 32 in. x 48 in.
⅜ in. x 24 in. x 48 in.

Bundled or Unbundled:

⅜ in. x 16 in. x 32 in.—(9 pieces, 32 sq. ft. per bundle)
⅜ in. x 16 in. x 48 in.—(6 pieces, 32 sq. ft. per bundle)
⅜ in. x 16 in. x 36 in.—(9 pieces, 36 sq. ft. per bundle)
⅜ in. x 16 in. x 32 in.—(6 pieces, 21.3 sq. ft. per bundle)

TRADE-MARKS

This form of lath is quickly applied—clipped to steel studs and joists in fireproof buildings or nailed to frame construction. It braces the framing, bonds with gypsum plaster securely, saves time and material in plastering and does not spoil the "set" of plaster by absorbing any quantity of water from it. It will not swell, buckle, rust or burn. The finished wall is a better insulator against heat, cold and sound.

The two outstanding features required of gypsum lath are strength and binding qualities with plaster.

The following table which gives the adhesion in pounds per square inch of plaster to various lath backings, shows that our gypsum lath forms the best adhesion with gypsum plaster:

BONDING QUALITIES OF GYPSUM PLASTER ON VARIOUS KINDS OF LATHS*

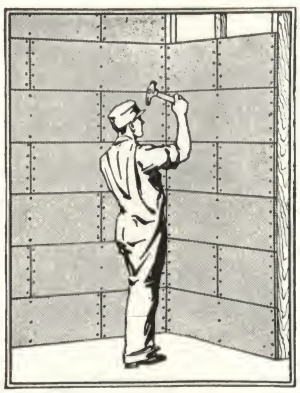
Kind of lath backing	Adhesion, lb. per sq. in.
1. Wood Lath No. 1	2.1
2. Metallic Laths	
(a) Sheet Metal	1.6
(b) Expanded Metal	4.3
(c) Woven Wire	2.4
3. Plaster Boards	
(a) Fiber	2.3
(b) Gypsum	6.0

*Name of testing laboratory on request.

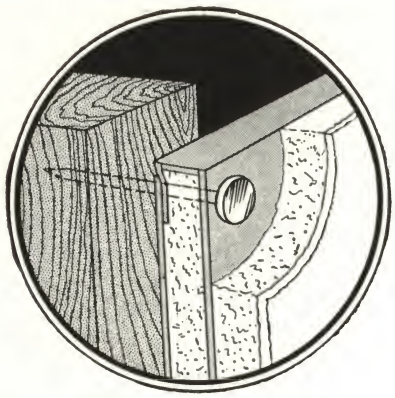
Certain-teed and *Beaver* gypsum lath, being built from gypsum rock, are highly fireproof. Permanent satisfaction in using it depends largely upon staggering the panels and on using standard grounds in plastering.

When Used in Frame Buildings

Gypsum lath makes a smooth, evenly finished plastering job, and saves time in lathing, labor and material. The slabs are light, easy to handle and nail to the studs and joists. Being uniform in size, they are easy to cut to fit around openings and into odd-shaped corners. Plastering over it is quick work and gratifying to careful workmen. The full base coat is applied in one operation. It is firm and true, and the surface takes



Light in Weight and Easy to Nail to Studs and Joists



Gypsum Lath Builds a Sturdy Wall

The Full Base Coat Is Applied in One Operation

hold of the plaster with even suction at every point, making it just right for rapid troweling.

Less plaster is required than for wood or metal lath since there are no openings through which plaster must be forced to form keys. There is instead an over-all surface bond of much greater strength with no plaster waste.

Specifications for Use in Frame Buildings

General—This contractor shall examine all studs, joists and furring and see that they are all spaced 12 or 16 in. on centers, and are set straight and true to line; also that all wood grounds are of the correct thickness and properly installed. Where the above work is not satisfactory he shall so advise the General Contractor who shall arrange to have the proper adjustments made.

Note: The placing of studs, joists and furring on 12 or 16-in. centers and setting them straight and true to line should be included in the specification for Carpenter Work.

Note: All wood grounds for plastering should be furnished and set by the Carpenter and included in the specification for Carpenter Work. They should be ⅞ in. thick for ⅜-in. gypsum lath, ¾ in. thick for ¼-in. gypsum lath and 1 in. thick for ½-in. gypsum lath.

Lathing—All lath shall be *Certain-teed* or *Beaver* Gypsum Lath for all walls, partitions and ceilings. They shall be .... in. thick x .... in. x .... in.

Note: Where it is desired to have all horizontal joints staggered, use the following paragraph.

Breaking Joints—The bottom rows on walls and the starting rows on ceilings shall consist of alternate half and full size boards to provide for breaking of horizontal joints on walls and cross joints on ceilings. Vertical joints on opposite sides of partitions and walls shall not occur on the same stud.

Note: Where it is desired to have all vertical joints staggered, use the following paragraph under the heading "Breaking Joints."

The boards shall be applied across all studs, joists and furring the long way, breaking all vertical joints on walls and all butt joints on ceilings.

Plastering—Gypsum lath shall not be wetted before plastering. First coat shall be thoroughly applied and the plaster worked well into the joints and the surface scratched or scored to provide a bond for the finish coat.

Nailing—Lath shall be well nailed to studs, joists and furring. The center of lath shall be nailed first—then edges. Nails shall be spaced about 4 in. apart at ends and intermediate studs. All nails shall be driven home.

Nails—Shall be 1⅛ in., 13-gauge, ⅜-in. head, blued and sterilized special plaster board nails, or 1¼-in. 3d sterilized blued lath nails, or 3d common nails for ⅜ and ¼-in. lath, and 4d common nails for ½-in. lath.

Note: For balance of plastering specification see *"Basic Specification for Lathing and Plastering"* in foregoing pages.

When Used in Fireproof Buildings

Clipping the uniform size slabs of *Certain-teed* or *Beaver* Gypsum Lath to steel studs and joists is rapid work. Plastering the true, firm surfaces of uniform thickness and suction is a time-saving job of real satisfaction to the plasterer. He gets a true surface for a finish coat of even thickness and strength. He saves plaster, too, for these laths provide a natural bond with gypsum plaster, of great strength, and there are but few openings in the backing it builds. Add to the savings of application those of supporting construction due to its lighter load, and you can realize the worthwhile economy *Certain-teed* and *Beaver* Gypsum Lath can effect.

Specifications for Use in Fireproof Buildings

Note: Gypsum lath can be readily placed on any of the various types of solid or hollow metal stud walls or partitions and suspended ceilings.

Solid Partitions

Supports—Will be metal studs for solid partitions spaced 24½ in. on centers and anchored to flooring and ceiling, furnished and installed under another contract.

Note: If the above partition framing is to be included in this specification the above paragraph should be revised and should include the type of construction and the manufacturer's name.

Lathing—Shall be *Certain-teed* or *Beaver* gypsum lath (include sizes), erected on one side of studs only, and secured to metal studs by approved device specified by the manufacturer of studs used. Bottom row shall consist of alternate half and full size boards to provide for breaking of horizontal joints over entire wall. Metal clips shall be placed at middle of each horizontal joint separating boards not less than ¼ in.

Grounds—Will be furnished and wired to studs by the Carpenter, and of sufficient thickness to allow at least ½-in. thickness of plaster beyond face of lath.

Note: The furnishing and setting of the above grounds should be included in the specification for Carpenter Work.

Plastering—Gypsum lath shall not be wetted before plastering. First coat shall be thoroughly applied and the plaster worked well into the joints and the surface scratched or scored to provide a bond for the second coat.

Hollow Partitions

(Exceptions to above specifications as applied to hollow partitions.)

Note: Revise the various clauses of the above specification to include the requirements for a hollow partition construction.

Supports—Will be metal studs for hollow partitions.

Lathing—To be erected on each side of studs. Full size boards of bottom rows should match with half size boards on opposite sides of studs. Steel cross braces to be fastened to opposite horizontal joint clips, if necessary.

Grounds—(As above.)

Plastering—(As above.)

Suspended Ceilings

(Exceptions to solid partition specifications as applied to suspended ceilings.)

Note: Revise the various clauses of the solid partition specification to include the requirements for a suspended ceiling construction.

Supports—Solid partition metal studs to be used as joists and suspended on hangers, embedded or otherwise anchored at intervals as specified by the manufacturer of metal used.

Lathing—(As on solid partition.)

Grounds—(None required.)

Plastering—(On undersurface as specified for solid partitions.)

Other Uses

Gypsum lath is a material easy to saw and nail; it is uniform in size and thickness; it will not burn; has superior heat, cold and sound insulating properties; is moistureproof and has remarkable strength. With all these advantages it fills many other requirements in the building field besides serving as an ideal plaster base.

As a sheathing for the frame building it adds strength to withstand building sway and settling, saves fuel in winter, keeps out heat in summer, and adds immeasurable fire protection. Also, the speed with which it is placed saves time in building.

It is used in large quantities for fire protection, being nailed direct to timbers; for building fire-stop partitions and ceilings and for lining closed spaces susceptible to fire.

Under flooring, it serves as an effective sound, heat, cold and fire insulation.

Under roofs and on attic walls it saves many dollars in fuel by preventing heat from escaping. It keeps out sun heat in summer and is excellent insurance against the spread of fire.

For poured gypsum roofs it is a part of an excellent type of construction. It serves as a base and as the poured gypsum bonds with it becomes an integral part of the roof.

For the factory where the underside of the roof is the ceiling, its fiber surface is clean, dustless and attractive, and adds heat and cold insulation to the gypsum of the roof itself.

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

CERTAIN-TEED AND BESTWALL GYPSUM WALL BOARDS

Certain-teed and Bestwall Gypsum Wall Boards are made of smooth solid sheets of gypsum, moulded between sheets of heavy, long fibered, non-scuffing paper of unusual strength, that acts as a surface. Both are supplied in the following sizes: ¼ in., ⅜ in. and ½ in. thick x 32 in., 36 in. or 48 in. wide and 6 to 12 ft. long.

Uses

They are used for walls, ceilings, partitions in new construction, and in remodeling and repairing.

Features

(1) Will not warp or buckle.

(2) Resist moisture and climatic changes.

(3) Provide valuable extra insulation by exclusive embedding of air cells.

(4) Produce smooth walls.

(5) Take any form of decoration.

(6) Joints filled and leveled flush with Certain-teed and Bestwall Joint Filler.

(7) Wood mouldings may also be used to cover joints.

(8) Certain-teed and Bestwall Boards are standard. Will meet all usual tests for quality and strength.

(9) Both are closed-edge boards; i.e., papers on both surfaces cover and thus protect edges.

(10) **Fire Resistant:** Certain-teed and Bestwall boards are extremely fire resistant. In tests, they have withstood for fifteen minutes the heat of a Meeker burner (1200° to 1500° F.) with only slight damage to the surface.

Due to exceptional fire resistant qualities they are excellently suited for partitions in fireproof buildings.

(11) **Application:** Certain-teed and Bestwall Boards may be sawed and nailed like lumber or scored and broken and directly nailed to studs, joists, wood furring strips or over old construction, then painted, kalsomined or papered.

Boards are nailed on all edges, headers being provided in the framing for the ends, with 3d flat head nails placed at intervals of about 7 inches. They are nailed to the center supports with 3d flat head nails placed about every 10 inches.

Application Details

See paragraph 11 above.

BESTWALL

Not Only a Superior Board but Kept Superior—by Twin Mounting

The Old Way

Gypsum wallboard has been shipped in single sheets, leaving the face exposed to possible marring and the ends prey to nicks

The New Way ➡

"Twin Mounting"—Two sheets of Bestwall are placed face to face and held securely at the ends with strong tape—safe against damage

How the Improved Packing—Twin Mounting—Protects Bestwall

Not only does Bestwall, the original gypsum wallboard, have a beautiful finish, superior strength, proven insulating qualities and fire-proof feature but we now pack it so these features arrive on the job as we built them into the board in the factory with the faces kept clean and ready for decorating.

Twin Mounting means that two boards are packed face to face with the ends bound together with strong heavy tape. Thus the beautiful surface of Bestwall arrives unmarred by scratches and unsoiled from handling. The edges too are protected by this reinforcement. The whole board gets to the job in perfect condition. That's what Twin Mounting means.

By specifying Twin Mounting Bestwall, you not only secure for your client a superior product but you make it easy for your contractor to give you a first-class job.

Write us for complete information on Twin Mounting Bestwall.

No More Damaged Edges

No More Marred Faces

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

FILLING THE JOINTS—GYPSUM WALL BOARD

A most important item in applying "Certain-teed" and "Bestwall" Gypsum Wall Boards

Joints and nail heads properly filled and covered do not show after decorating with paint, kalsomine or paper. They are not difficult to fill but careful work is necessary to assure smooth, perfect walls and ceilings. All joints are filled in the same manner, with the two operations of roughing-in and finishing.

Preparing the Joint Filler

Certain-teed Joint Filler should be mixed in small batches in a clean, square pan. Put some clean water into the pan, sprinkle the filler into it and mix to the consistency of ordinary plaster. See instructions on our Joint Filler Container. In applying filler there are two operations—roughing-in and finishing.

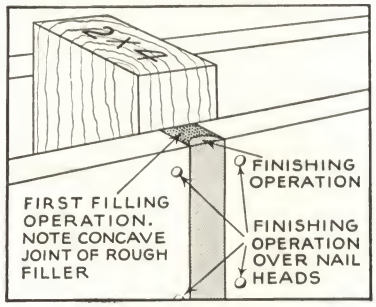
Roughing-in the Joints

Use a 12x12 mortar hock and 11-in. plasterer's trowel.

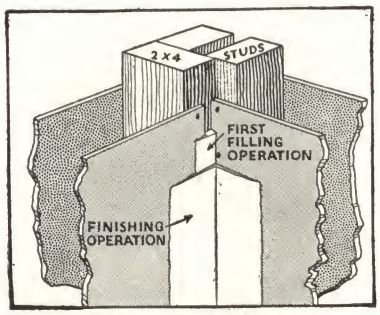
To put on first coat, little ribbons of filler should be cut from the hock the full length of the trowel and forced firmly into the joints.

The surface of the joint should be kept below the surface of the wall and surplus material should be struck off.

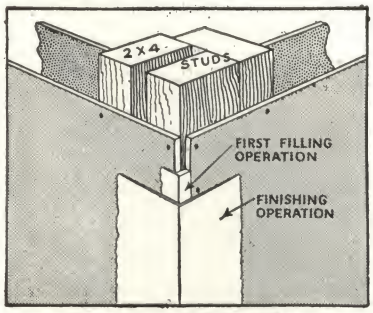
To make joint concave and to rough it up for receiving the finish coat, the trowel should be tipped on end and drawn down the length of the joint, or wash down with water and a kalsomine brush. Then allow to harden before finishing.



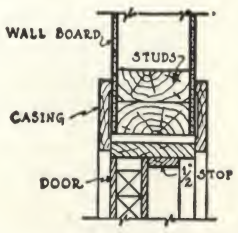
Sidewall Joist



Interior Corner Joint



Corner Joint Without Bead



INSIDE DOOR DETAIL
NEW FRAMES

Finishing the Joints

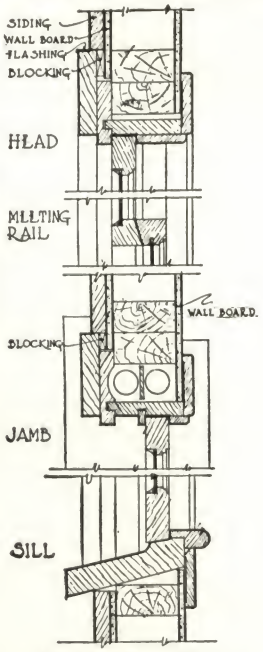
When rough filled joint has set hard, wet the joint and adjacent surface using a paint brush and water. Then mix filler slightly thinner than before and apply to each joint to make an absolutely straight wall, using 11-in. edge of trowel as straightedge across joint. Let set until just about hard, sprinkle again with water and trowel down to a smooth finish.

Finishing Corners and Angles

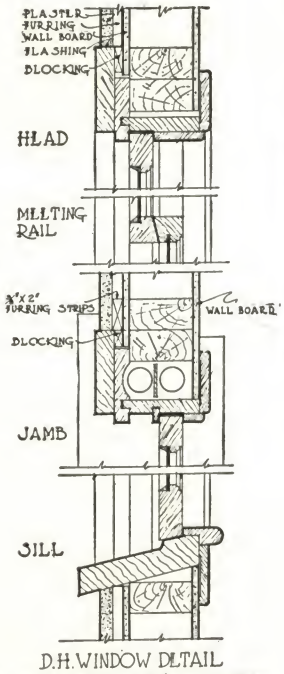
Joints at corners and angles are finished in the same manner as at edges. Where corner beads are not used for external corners, and either slab does not entirely fill out the corner, set a straightedge, or arris, along the face of the board on one side so that it locates the exact position of the finished corner. Fill out the first filling operation with filler flush with the straightedge. When the filler has set sufficiently, remove the straightedge. In the second operation, smooth out to a featheredge as on other joints.

Covering the Nails

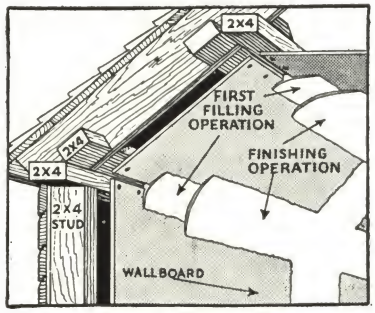
All nails or nailholes should be dampened and spotted with same filler used for joints, leaving surface flush with the board. Nail filling when dry should be sanded to a smooth surface.



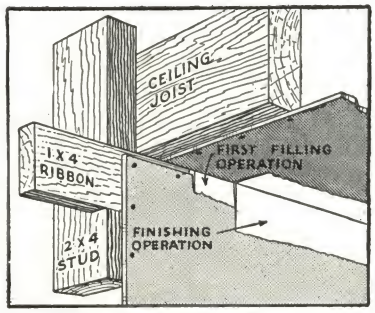
D.H. WINDOW DETAIL
WALL BOARD USED INSIDE & FOR SHEATHING WITH NEW FRAMES - EXT FINISH - SIDING



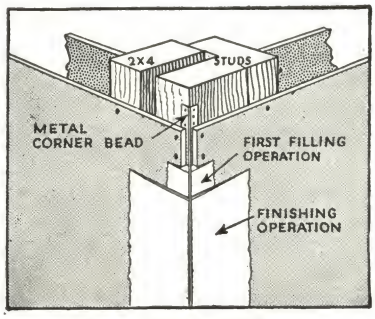
D.H. WINDOW DETAIL
WALL BOARD USED INSIDE & FOR SHEATHING WITH NEW FRAMES - EXT FINISH - PLASTER.



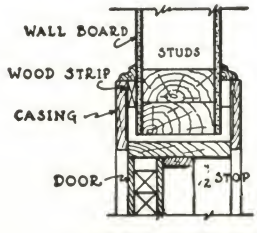
Covered Ceiling Joint



Wall and Ceiling Joint



Corner Joint with Bead



INSIDE DOOR DETAIL
OLD FRAMES

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

BEAVER BOARD—THE ORIGINAL FIBRE WALL BOARD

The Standard for Quality

Genuine Beaver Board is the original wall board and millions of these serviceable panels are used in homes, factories, stores and for a variety of special uses where a sturdy light weight board in convenient sizes is desirable.

TRADE-MARK

Beaver Board is well known throughout the world for its high standard of quality. It is the original fibre wall board and was introduced to the building world in 1906.

Beaver Board Saws Easily Without Rough Edges

Beaver Board Is Tough and Rigid and Nails Securely Into Place

Beaver Fibre Board (4-Ply)

This 4-ply board is made of long, tough interlocked fibre, pebbled surface on one side—smooth on the other. It contains millions of tiny dead air cells and combines not only heat and cold resisting properties but also strength, rigidity and surface qualities. It comes in convenient panels approximately $\frac{3}{16}$ in. thick, 32 and 48 in. wide, in 6, 7, 8, 9, 10, 12, 14 and 16-ft. lengths, packed 10 panels per bundle.

One side of the board is pebbled and the other side is plain, giving two different decorative surfaces. A special sizing seals the surface against moisture or climatic change and reduces paint consumption.

Advantages—The advantages of Beaver Board are its light weight, ease of cutting and application, insulating qualities and attractiveness of the finished job.

Beaver Board may be applied over old papered or painted walls, thus saving the cost of removing the paper or the need of patching plastered walls. It is of even thickness and has no grain. It is tough, rigid and will not crack, chip or sag, and may be sawed to any odd size.

Jumbo Beaver Fibre Board (5-Ply)

This 5-ply board, known as *Jumbo Board,* is made of the same materials and in the same way as the Standard Beaver Board and is identical with it, except for thickness and weight.

Jumbo Board is recommended for jobs where exceptional strength is desired.

It comes in convenient panels, approximately ¼ in. thick, 32 and 48 in. wide, in 6, 7, 8, 9 and 10-ft. lengths, packed 10 panels per bundle; and in 12, 14 and 16-ft. lengths, packed 8 panels per bundle.

This Special Surface Takes Paint Easily, Gives an Even Finish, Free from Roughness

Pleasing Decorative Effects May Be Produced by Paneling the Board Intersections

BEAVER HARD BOARDS

Beaver Hard Board Made for Various Uses

Beaver Hard Boards are made entirely of wood fibres. Clean wood chips are exploded under high steam pressure. The resultant pulp is pressed or "felted" together under hundreds of tons of pressure. This makes a board that is grainless and knotless. Changes are physical not chemical. No binders are added. It has greater moisture-resistance and is tougher than Nature's own material. Made in Beaver Hard Board; Beaver Tempered Hard Board; Beaver Dense Wood; Beaver Deluxe Dense Wood; and Beaver Dense Tile.

Beaver Tempered Hard Board for Concrete Forms

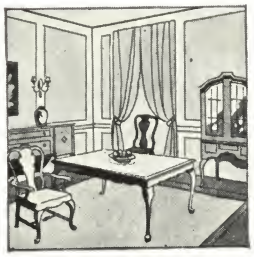
The superior tensile and transverse strength of Beaver Tempered Hard Board, and its resistance to moisture, make it ideal for concrete forms because it retains the mixing water in concrete mixtures thereby insuring the complete and uniform hydration of concrete during early stages of curing.

Beaver Tempered Hard Board forms not only insure better concrete but have effected substantial economy. Beaver Tempered Hard Board can be re-used many times.

Sizes and Thickness

The boards are uniformly 4 ft x 12 ft., cut accurately rectangular in shape with smooth, sharp arrises. *Form Liner Boards:* ⅛ in and $\frac{3}{16}$ in thick. *Structural Form Boards:* ¼ in and $\frac{5}{16}$ in. thick.

STANDARD SIZES OF BEAVER HARD BOARDS

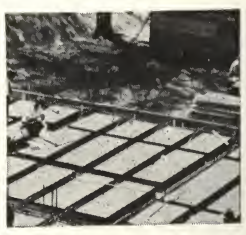


Beaver Hard Board

Longs	Thickness, in.
4x6 ft. and 4x12 ft.	⅛
4x8 ft., 9 ft. and 10 ft.	⅛
4x6 ft and 4x12 ft.	$\frac{3}{16}$
4x8 ft., 9 ft. and 10 ft.	$\frac{3}{16}$
4x12 ft. only	¼
4x12 ft only	$\frac{5}{16}$
Shorts	
4x2 ft., 3 ft. and 4 ft.	⅛
4x2 ft., 3 ft. and 4 ft.	$\frac{3}{16}$

Beaver Tempered Hard Board

Longs	Thickness, in.
4x6 ft and 4x12 ft.	⅛
4x8 ft. and 10 ft.	⅛
4x6 ft. and 4x12 ft.	$\frac{3}{16}$
4x8 ft. and 10 ft.	$\frac{3}{16}$
4x12 ft. only	¼
4x12 ft. only	$\frac{5}{16}$
Shorts	
4x2 ft. and 4 ft.	⅛
4x2 ft. and 4 ft.	$\frac{3}{16}$



Write nearest Sales Office for other sizes.

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

THE MATHIESON ALKALI WORKS (INC.)

GYPSUM DIVISION

Manufacturers and Distributors

1625 Eckington Place, N. E.
WASHINGTON, D. C.

EXECUTIVE OFFICES: 60 East 42nd Street, NEW YORK, N. Y.
BRANCH OFFICE: First National Bank Building, CHARLOTTE, N. C.
MILLS AT SALTVILLE, VA., and NORTH HOLSTON, VA.

A COMPLETE LINE OF GYPSUM AND RELATED BUILDING PRODUCTS

Products

GYPSUM PLASTERS:

Southern, Cherokee, Boone and *White Top*—fibered and unfibered.

Southern and *White Top*—wood fibered.

GYPSUM WALLBOARD and LATH:

Mathieson and *Southern* brands.

GYPSUM BLOCK:

Southern brand—hollow and solid.

Also Concrete Special Bond Plaster; Pioneer Gauging Plaster, Pioneer Moulding Plaster and Keene's Cement (manufactured by Best Bros.); Milcor Metal Lath Products; Ohio Finishing Lime; Hydrated Lime.

Gypsum Plasters

MATHIESON Gypsum Plasters are made from pure gypsum rock, mined and manufactured at our North Holston, Va., mines and mills and are marketed under the above listed brands.

Our large testing laboratories assure you of A-1 quality plaster, uniform at all times and manufactured with the latest Raymond and Tube mills.

Gypsum Block

Southern brand Gypsum Block are of the highest quality, fire-resisting, heat, cold and sound-resisting. They are light-weight and the correct material for interior, non-bearing partition, beam and column covering and wall furring.

Sizes—12x30 inches; thicknesses, 2 and 3 inches solid; 3, 4, 5 and 6 inches hollow.

Wall Board

Southern and *Mathieson* Wall Boards are finished wall materials. They are gypsum rock wall boards, light in weight and of great strength and rigidity; will not warp or shrink.

Sizes—Manufactured in 6 to 12-foot lengths; uniform thicknesses of ¼, ⅜ and ½-inch.

Gypsum Lath

Produced in the same manner as gypsum wall board and is a perfect plaster base.

Sizes—¼, ⅜ and ½-inch thicknesses. Standard sizes are 16x32 and 16x48 inches, bundled; also 24x32 and 32x36 inches, unbundled.

Mathieson's Products Are Always Your Assurance of Quality

Other Products

We are in position to supply in mixed cars:

Hydrated Lime; Ohio Finishing Lime; Best Bros. White Gauging, Moulding and Casting Plasters and all grades of Keene's Cement; Metal Lath; Insulating Board; Gypsum Rock for cement manufacturers; Stucco for glass and marble manufacturers and Agricultural Gypsum.

KELLEY PLASTERBOARD CO., INC.

Manufacturers and Distributors of Building Materials

DELAWANNA, NEW JERSEY

(Nine Miles from New York City)

For Kelley Concrete Filled Columns, Kelley Plastic Textures, See File Index

Products

KELLEY CORK-GYPSUM WALL BOARD.
KELLEY CORK-GYPSUM INSULATING WALL BOARD.
KELLEY CORK-GYPSUM LATH.
KELLEY CORK-GYPSUM INSULATING LATH.
KELLEY GYPSUM PLASTERS.
KELLEY MONUMENT COLORED STUCCOS, Exterior and Interior.
KELLEY MONUMENT INTERIOR COLORED FINISH.

A KELLEY (K) PRODUCT

Among the Oldest Plasterboard Manufacturers in America

Mr. S. J. Kelley, President of the Company, was granted patent No. 905-191 in 1908, which was the original patent on two-paper Plasterboards, which are now in standard use. Mr. Kelley first manufactured Plasterboards in 1908, and has been constantly active in the production of Gypsum Board and other products manufactured by this company. Our research laboratories have been continuously at work improving our formulas. Machinery has been designed and installed to produce quality products which are acceptable to Architects and Builders.

Special Delivery Facilities

Especially quick service is provided for the entire New York, New Jersey and Metropolitan area by means of a large fleet of trucks, assuring prompt deliveries. Delivery through railroad service is maintained at the plant by sidings located on the main line of the D. L. & W. Railroad, nine miles from New York City.

KELLEY CORK-GYPSUM WALL BOARD

An Improved, Lighter, Fireproof Gypsum Wall Board with Greater Insulating Qualities

Kelley Cork-Gypsum Wall Board Differs from Other Gypsum Wall Boards

Kelley Cork-Gypsum Wall Board differs from other gypsum wall boards in that it contains finely ground cork mixed with the gypsum making up the core.

The addition of the ground cork to the gypsum results in a lighter, more resilient board without sacrificing its strength or non-warping qualities.

Lightness—The ground cork, being lighter than the gypsum it displaces, naturally makes the board lighter.

Fire Resistance—The fire-resisting qualities of gypsum wall board have been clearly demonstrated in its retarding of fires in all sections of the country. Fires have raged against gypsum wall boards for an hour without damaging the studs back of the board. The addition of cork, which itself is fire-resistant, does not affect the fire-resistant qualities of the board as the particles are small and each is surrounded by non-burning gypsum of the core.

Flexibility—Greater flexibility is given to the board by the addition of the cork to the core, as the cork itself is more flexible than the gypsum rock.

Additional Thermal and Acoustical Insulation Values

Cork is a well known insulator against both thermal and sound waves and its use in Kelley Cork-Gypsum Wall Board adds to these same qualities possessed by the pure gypsum. The thousands of tiny air cells in the cork are confined as they are completely surrounded by the gypsum enclosing them.

Other Added Advantages

The addition of the cork permits easier sawing as well as giving greater grip on the nails as they pass through the particles of cork.

Illustration Showing the Cork Aggregate in the Board and Patented Reinforced Edge

A Strong Square-Covered Edge Board

The reinforced edge and the cork in the gypsum core allow nailing as close to the edge as required, as it never chips, splits or buckles. The tough, heavy, manila lined paper cover of the board adds to the strength and allows the board to be sawed at any angle or any shape.

Cream Colored, Non-Scuffing Sized Surface

The finished surface of Kelley Cork-Gypsum Wall Board is an attractive ivory in color. It has the added advantage of the surface being highly sized, thereby requiring less sizing than the ordinary gypsum board.

The surface of the paper is extremely tough and resistant to scuffing which makes it less easily damaged on the job either before or after erection.

Sizes and Thicknesses

Kelley Cork-Gypsum Wall Board is made in three thicknesses, ¼ in., ⅜ in. and ½ in. All boards are made of exactly the same material and differ only in thickness.

Directions for Applying

Always handle this board two sheets at a time, face to face. Pile flat in center of the rooms. Space studs and joists 16 in. on center. Be sure they are straight and level. Place headers so that all sides and ends of board will be nailed.

Sawing—Place board face up and use common hand saw, supporting board close to sawing edge.

Nailing—Use three-penny fine flat-head nails. Nail every 6 in. on all intermediate supports on ceilings, every 9 in. on walls. At all sides and ends, nail every 3 in. Apply wall board to ceiling first. Wall board should be spaced about ⅛ in. apart, then nailed to stud or joist.

Joint Filling—There are several methods in use for the treatment of joints. Good results have been obtained by the following methods:

(1) Filling of joint with specially prepared filler.

(2) Filling of joint with specially prepared filler, then placing a strip of woven, processed fabric about 2 in. wide over the joint and smoothing out with additional filler if necessary.

(3) Filling of joint with specially prepared filler, then placing a 2 or 3-in. strip of 14 mesh galvanized screen wire over the joint, and applying additional filler to smooth out if necessary.

"Butter" the joint with a liberal amount of filler and immediately place strip of fabric or metal cloth in place. Draw your knife firmly over the fabric or metal, using pressure enough to squeeze or force the filler through the mesh of the strip. Smooth surface on the edges with filler.

Tools—A putty knife, a small trowel or a semi-elastic blade are excellent tools for this kind of work.

Sandpapering—When filler is dry or about 48 hours after application, sandpaper with No. 1½ Sandpaper. A little practice with filling and sandpapering will give good results, and if properly done, one operation prepares the board for decorating.

How to Decorate Over Cork-Gypsum Wall Board

Plastic Paints—Be sure a reputable product is used. Apply it in accordance with manufacturer's directions for texturing.

Painting—Cork-Gypsum Wall Board should be dry, clean and free from dust and dirt. Apply priming coat of color size, using care to apply it uniformly. Mix priming coat of equal parts of varnish size and paint of required color.

Calcimining—Apply varnish size and follow with calcimine. The varnish size makes it possible to wash off calcimine if desired.

Papering—Before papering, apply coat of varnish sizing. This makes removal of paper easy when repapering, is better than glue and insures more satisfactory job than if no size is used.

KELLEY CORK-GYPSUM INSULATING WALL BOARD

Back Covered With Aluminum Foil

This wall board is made in exactly the same manner as the regular Kelley Cork-Gypsum Wall Board, except that one side is covered with polished aluminum foil.

Numerous tests have already clearly demonstrated the effectiveness of the insulating value of the polished aluminum foil. Aluminum foil is used as insulation commercially in the modern ships, air conditioned trains, milk and other trucks, refrigerator cases, etc. It insulates against heat by reflecting the radiant heat from its polished surface. The surface will reflect 95% of radiant heat striking it. It thereby reflects heat back into the house in winter, keeping it warm, and in summer the reverse is true, keeping the interior cool.

The extremely light weight of the aluminum foil adds little to the weight of the board.

KELLEY CORK-GYPSUM LATH

The enormous increase in the use of gypsum lath for a plaster base is due to very definite advantages which it possesses as a plaster base.

Kelley Cork-Gypsum Lath is made to exactly the same formula as Kelley Cork-Gypsum Wall Board. The only difference is in the paper used and the size of the lath to allow for easier handling on the job.

Section of Kelley Cork-Gypsum Lath
Cork in the Core Adds to Insulation Value and Also Permits Better Nailing

Advantages of Kelley Cork-Gypsum Lath

(1) An Ideal Plaster Base — Repeated tests have shown that the plaster bonds to the fiber of the surface of Gypsum Lath better than to any other type of lath. The strong paper fiber also causes a uniform suction and allows uniform application of the plaster.

(2) No Expansion or Contraction—The pure gypsum of the core does not expand and contract and the drying of the plaster does not affect it.

(3) Fire Retarding Back—It offers a smooth, fire resisting back on the inside of the partition and moisture has little effect on it.

(4) Saves on Plaster—The lath presents an even, smooth surface over which the trowel readily spreads the plaster evenly. No plaster can be wasted by droppings inside the partition.

(5) Saves Time in Plastering—As the lath does not have to be wetted, and the plaster coat is of even thickness, it dries out quicker and there is less moisture in the building. No moisture is absorbed into the structural timbers as the plaster does not touch them and there is less shrinkage in the frame.

(6) Economical in Erection — As the units are larger than those of wood lath, they are applied more quickly because of less handling, and they require fewer nails. This speeds up the work of lathing.

(7) Relative Cost—The cost of Kelley Cork-Gypsum Lath and Plaster is about the same as that of wood lath and plaster and less than that of metal lath and plaster.

(8) Sizes—Made in sizes 16x32 in., 16x48 in., 32x36 in., 32x48 in. Thicknesses ¼, ⅜ and ½ in.

Application of Kelley Cork-Gypsum Lath

Nails shall be 1⅛ in., 13 gauge, ⅜ in. head, blued long point nails. They shall be spaced 4 in. apart at every support, nailing to center supports first and then the outer edges. All nailing edges must be firmly supported on studs, joists and furring.

Joints shall be staggered in each course and between joints of walls and ceiling. Reinforce internal angles with cornerite metal lath, butting ends of strips but not lapping.

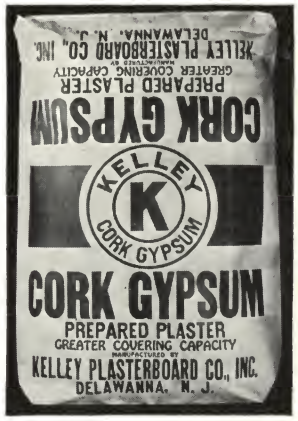
KELLEY CORK-GYPSUM INSULATING LATH

Kelley Insulating Lath is the same as the Cork Gypsum Lath, except that it has the aluminum foil back, the same as the Kelley Insulating Wall Board.

Sizes, Standard width, 16 in. Two lengths, 32 and 48 in.
Put up in convenient bundles, 6 boards to the bundle.

COMPLETE QUALITY LINE OF KELLEY GYPSUM PLASTERS

The line of Kelley Gypsum Plasters is complete for all building purposes. All gypsum products rate greatly beyond the tests of the A. S. T. M. requirements as well as Government tests for quality, etc.



A Scientific Discovery

For forty years, manufacturers have added Sand, Lime, and Asbestos to the basic Gypsum. This product is generally known in the trade as Prepared Sanded Plaster.

Several years ago we discovered that, by departing from those old formulas, and by the elimination of a percentage of Sand and by the addition of Ground Cork, we had developed a plaster of many new features.

First: Lighter in weight and bulkier; therefore greater covering capacity.

Second: A wall of equal toughness, but less apt to crack due to the flexible nature of the aggregate.

Third: The Cork content gives insulating and sound deadening qualities.

Fourth: Makes application easier due to its fluffier nature.

Fifth: Floats, takes white finish or textures with equal readiness.

Sixth: Last but not least—no greater cost.

Kelley Cork-Gypsum Plaster (Partially Sanded)

A Gypsum base coat convenient for the use on jobs where good sand is not available, or when an accurately factory mixed material is specified. The ground Cork is used in place of part of the sand. This makes it lighter and improves the working qualities of the Plaster.

In mixing, nothing but water is added.

Apply to any plaster base.

Kelley Neat (Cement) Plaster

This is a gypsum base coat plaster requiring the addition of sand on the job. This plaster is economical for use on large jobs in districts where good, clean and sharp sand is readily available.

It may be obtained fibered or unfibered as desired. It is fibered for scratch and brown coats—for use on gypsum lath, wood lath, metal lath, brick, gypsum or clay tile.

Scratch Coat—*On Gypsum, Wood and Metal Lath*—Mix 1 part plaster to 2 parts by weight of sand.

On Brick and Gypsum or Clay Tile—Mix 1 part plaster to 3 parts by weight of sand.

Brown Coat—*For All Plaster Bases*—Mix 1 part of plaster to 3 parts by weight of sand.

Kelley Wood Fibered Plaster

A neat gypsum plaster containing finely shredded wood fiber which gives it great strength and requires only the addition of water to be ready for use. It has great bulk, fire resisting and sound deadening qualities and is about two-thirds lighter in weight than sanded plasters. It spreads easily and is especially suitable for two-coat work. It may be sanded, if desired, with equal parts of good, clean, sharp sand. Its use is not recommended on brick, gypsum or clay tile.

Kelley Concrete Bonding Plaster

A specially prepared gypsum plaster for bonding to concrete surfaces. Used for scratch and brown coats with only the addition of water.

Applied in two coats as thinly as possible, using only enough to smooth out irregularities and not over ⅛ in. thick for both coats.

Kelley Finishing Lime

This lime is an Ohio Hydrated Lime especially prepared for finishing purposes and spreads easily. It is used with the Kelley Gauging Plaster as described below.

Kelley Gauging Plaster

For use with lime putty finish, to harden and hasten its set. It is made from exceptionally pure gypsum, ground to a uniform fineness.

For Trowel Finish—1 part of dry gauging plaster is mixed with 3 parts of lime putty by measure, or equal to 1 part of gauging plaster to 2 parts of hydrated lime by weight. Mix and apply by usual method.

APPROXIMATE COVERING CAPACITY OF KELLEY PLASTERS

	Yardage per Ton		
Plaster Base	Neat	Prepared Cork Sanded	Wood Fibered
Wood Lath	180-210 Sanded 2-1	60-70	90-100 Unsanded
Gypsum Lath	225-240 Sanded 2-1	75-80	115-120 Unsanded
Metal Lath	105-135 Sanded 2-1	35-45	55-65 Unsanded
Gypsum Tile	215-240 Sanded 3-1	65-70	180-210 Sanded 1-1
Brick and Clay Tile	165-200 Sanded 3-1	45-55	150-170 Sanded 1-1

KELLEY MONUMENT COLORED STUCCO AND INTERIOR FINISHES

Manufactured for 20 Years

We have specialized in the production of factory mixed colored stucco finishes for interior and exterior use for 20 years. Kelley Monument Colored Stucco and Interior Finishes have a background of 20 years of successful use and experience in their application and perfection. They are used for both exteriors and interiors. A list of satisfied architects and users and a list of installations will be gladly sent on request.

A stucco finish which is factory mixed has the following advantages:

(1) Absolute uniformity of mixture of the ingredients.

(2) Exactly measured proportions under laboratory control.

(3) Highest quality non-fading colors, uniform in every bag; made to a registered formula.

(4) Ease of handling and preparation for use by the contractor on the job.

(5) Exact color desired can be selected from finished color samples submitted for approval when specifications are being written.

Kelley Monument Colored Stucco (Exterior)

This is a cement stucco for exterior use over a cement base coat. It is made from white Portland cement, hydrated lime, crushed and carefully graded white marble, a dependable waterproofing, best grade non-fading mineral color pigments as well as other materials that make it extremely plastic under the trowel. This plasticity allows the mason opportunity to properly produce the desired texturing of the surface. It can also be used for interior work when applied on Portland cement base coats.

Proper Grading and Mixing

One of the most important requirements for good stucco is the proper grading and mixing of the aggregate. Monument Colored Stucco is machine mixed.

Accurate weighing and measuring of the aggregate is done under strict laboratory control. These factors assure uniform and dependable products backed by the reputation of a reliable firm.

Waterproofing of Stucco and Relation to Base Coats

Good results in stucco are dependent as much on the base coats as on the finish. The base coats must be Portland cement and thoroughly and slowly cured before the final finish is applied, in order to eliminate checks and cracks. Specifications for base coats should follow those of the Portland Cement Association for stucco base coats.

Kelley Monument Stucco contains a standard waterproofing as well as a percentage of hydrated lime which aids waterproofing and easy working qualities. It is not entirely waterproof as we have found through years of experience that the present composition of our formula gives the most satisfactory results when applied according to our directions. Monument Colored Stucco increases in hardness, strength and waterproofing qualities with age. External waterproofing is unnecessary.

Standard Colors and Textures

Kelley Monument Stucco is made in eleven standard colors and white. These standard colors have been found to be the most permanent and satisfactory after years of experience and testing. Sample card will be sent on request. and large reference samples will be gladly submitted. The texturing of the surface is readily done on account of the plasticity and easy working qualities of the stucco.

Architects' and Builders' Service

This Company maintains an architects' and builders' service for consultation on stucco and other plastering problems.

Large reference samples in any standard color or texture will be submitted. If desired, and when practical, we will furnish a demonstrator to go on the job to give advice and instruction regarding the method of texturing and application.

Packing

Monument Stucco is packed in 100-lb. paper bags. It comes ready mixed for use; simply add clean water.

Covering Capacity

Exterior Float Finish—Applied ⅛ to ¼ in. thick, covers 125 to 200 sq. yds. per ton, according to texture desired. One ton medium dash covers about 160 sq. yds. A very fine dash will cover 225 sq. yds. per ton.

Directions for Use

Precaution—The importance of properly wetting the base coat cannot be stressed too strongly. If the base is too dry, the moisture in the finish coat will be drawn into the base, causing the Monument Stucco Finish to lose its easy working qualities and thus making a poor bond.

For Pebble Dash or Rough Cast Finish—Place a quantity of the material in a clean mortar box and mix thoroughly with clean water. Keep the mixture well stirred and do not allow the heavier marble particles to settle. Apply with broom or willows.

For Exterior Texture or Float Finish—Mix Monument Stucco thoroughly until a putty-like consistency is obtained. Apply with a trowel and completely cover base coat. Trowel several times and double back before working the texture to avoid chip, map, or hair cracks. The entire wall, side of buildings, or section should be done in one continuous operation in order to avoid the appearance of joints. Apply Monument Colored Stucco not more than ¼ in. thick, the thickness depending upon the finish desired.

Never use a steel trowel for extra floating, as steel serves to draw the color to the surface and often "burns" the stucco, causing discoloration.

KELLEY MONUMENT INTERIOR COLORED FINISH

A Plaster Finish for Walls and Decorative Treatment in One

Used Only on Gypsum or Lime Plaster Base Coats

This is for use only on interior gypsum or lime plaster base coats as it differs from exterior Monument Stucco in that it has a Keene's cement plaster base instead of Portland cement. This must not be used on wall boards or insulation boards. (For Textural Finish on wall boards or insulation boards, see Arrow-Tex Plaster or Mono-Coat Plaster Finishes. See File Index.)

Texture and Color in One Application

As it is a plaster product, it is applied by the plasterer, in place of white coat, as a finish textural coat or sand finish. It has the advantages of color being combined in the finish, thereby saving in the cost of the painting of the finished wall or ceiling.

Colors

Monument Interior Colored Finish is made in eleven standard colors and white. These are all pastel shades which have met the general approval of architects and decorators. The colors become a part of the wall itself and are permanent. Produced in the following standard colors:

Ivory	Apricot	Old Rose	Putty
Cream	Tan	Pearl	Green
Buff	Orchid	Blue	White

Texturing and Finish

This product may be applied to produce any texture desired or may be left in a natural sand finish texture.

Advantages

The advantages of this finish are:

(1) It effects a considerable saving in the cost of the labor of finishing walls, as the finished plaster coat is textured and colored in the one operation.

(2) It can be applied by the plasterer in place of the white coat.

(3) Practically any surface texture may be secured by its use, as it is applied in thicknesses of ⅛ to ¼ in.

(4) The thickness of the application allows for straightening out of inequalities in the base coat.

Samples of Texturing and Service

Large reference samples of any of the standard colors will be produced and submitted to architects for approval. Our consulting service department is always glad to work with architects to carry out their ideas regarding special textures or finishes.

Packing

Monument Interior Colored Finish is packed in 100-lb. paper bags. It comes ready mixed for use; simply add clear water.

Covering Capacity

The covering capacity is approximately 200 to 300 sq. yds. per ton, depending on the textural treatment, the thickness of application and the condition of the walls.

Directions for Applying

Precaution—Best results are obtained by leaving base coats of walls under the "darby" finish. When applying brown coat of gypsum or lime, broom scratch the surface to assure a good bond.

Base Coats—See that the base coat is thoroughly dry to allow for cracks and shrinkage, then wet down the walls thoroughly to obtain a uniform suction before applying Monument Interior Colored Finish.

Mixing—Finish should be placed in a clean box, mixed well with clean water to putty-like consistency and then it is ready for applying.

Applying the Finish—Monument Interior Colored Finish should be applied as a finish coat only over a regular rough gypsum or lime base coat. Finish should be applied about ⅛ to ¼ in. thick, depending on the texture desired or the roughness of the wall; a thicker coat might hair crack.

For Float or Sand Finish—Apply with a trowel and when sufficiently set, float with a wood, carpet or felt float; texture to suit. *Do not use a steel trowel for floating.*

STRUCTURAL GYPSUM DIVISION

AMERICAN CYANAMID AND CHEMICAL CORPORATION
(FORMERLY STRUCTURAL GYPSUM CORPORATION)

TELEPHONE
Circle 7-0100

EXECUTIVE OFFICES
30 Rockefeller Plaza, NEW YORK, N. Y.

SALES OFFICES IN THE PRINCIPAL EASTERN CITIES

For Gypsteel Pre-cast Roofs and Floors, and Gypsteel Gypsum Partition Tile, see File Index

Products

GYPSTEEL GYPSUM PLASTERS.

Daily Delivery Service

The central location of our plant at Linden, N. J., in the New York Metropolitan Area, makes rapid and prompt deliveries to all parts of that area possible. Gypsteel Plasters are delivered by truck within fifty miles of New York, N. Y., the morning following the receipt of orders. Deliveries to points beyond are made by rail.

Full Line of Plasters

Gypsteel Gypsum Plasters are supplied for all uses—Neat, Sanded, Wood-Fibered, Gauging, Moulding, Bond Coat for application to concrete, Colored Finishing Plasters, Finishing and Mason's Hydrated Limes and Super-Tex Plastic Paint.

All Gypsteel Gypsum Plasters are shipped in strong paper bags or jute sacks marked with a large diagonal green stripe for easy identification.

Ask for Service Sheet No. 6 giving complete specifications and other useful information.

GYPSTEEL GYPSUM PLASTERS

Description and Advantages

The exclusive Gypsteel Process of making gypsum results in a product of great purity and uniform quality. One batch of gypsum made by our process is just the same as another, for *it does not depend for its uniformity upon the percentage of gypsum found in gypsum rock in nature,* which varies greatly. Some of the outstanding advantages of Gypsteel Gypsum Plasters are:

(1) Great Slip and Spread.
(2) Strong and Tough Walls.
(3) Uniformity in Set and Surface Hardness.
(4) Eliminates Climatic, Setting Time and Sand Complaints.

Gypsteel Neat Plaster

Requires addition of sand on the job. Most economical on large operations where a good, clean sharp sand is available. Is well fibered for scratch or brown coats over wood lath, metal lath, brick or gypsum and clay surfaces. May be supplied unfibered when desired. Mixed according to directions, one ton with sand added will cover as much surface as 3 tons of ready sanded plaster.

Specifications—Grounds should be ¾ in. for 2-coat work and ⅞ in. for 3-coat work.

Gypsteel Sanded Plaster

Ready for use with addition of water only. Clean, sharp sand assures a mortar that is smooth and easily worked. Especially recommended in localities where good sand is not available at reasonable prices.

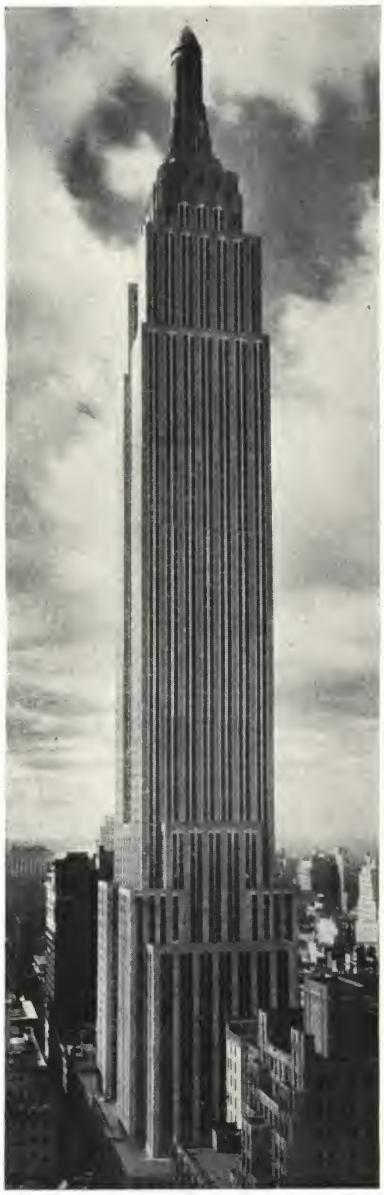
For use on wood lath, metal lath, gypsum tile, brick or clay tile.

Specifications—Grounds and lathing to be same as neat plaster.

Gypsteel Wood-Fibered Plaster

Contains finely shredded wood fiber giving the plaster toughness, flexibility and bulk. Spreads easily and is especially suitable for two coat work. Comes ready to apply with the addition of water only. If desired, equal parts of good, clean sand may be added at the job. Wood-fibered plaster is more bulky than other grades and will cover a slightly greater area.

Specifications—Grounds and lathing same as for neat plaster. Is to be used with or without sand. If sand is added at the job it will accelerate its set, consequently, the mill should be notified how the material is to be used so that proper retardation can be made.



Empire State Building, New York, N. Y.
A Gypsteel Plaster Job Throughout
Photo by Techni-Photo, New York, N. Y.

Gypsteel Bond Plaster

Especially made for application to interior concrete ceilings and walls. Gypsteel Bond insures greatest adhesion to concrete surfaces. Used with addition of water only. Walls must be clean and free from dust, oils or efflorescence. We advise cleaning concrete surfaces with a weak solution of muriatic acid, using a wire brush.

Grounds to be of sufficient thickness to bring to a true and even surface—usually ¼ in. Dries to a light gray surface, ready for application of white finish coat or it can be finished by troweling to its natural gray color.

Gypsteel Gauging Plaster

Is manufactured from selected gypsum. It is cool and smooth working and has uniform setting qualities.

For Trowel Finish—Mix approximately three parts of lime putty, by measure, with one part of dry gauging plaster; equal to two parts of dry hydrated lime and one part of dry gauging plaster, by weight. Mix thoroughly; apply in usual manner.

Gypsteel Moulding Plaster

Is an exceptionally high grade and finely ground material. Possesses cool working qualities and assures a clean sharp definition in finished cast.

Gypsteel Prepared Finishes (In Colors)

A ready prepared finish requiring only addition of water. Comes in various colors and tints. Color chart sent upon request. Permits a wide variance in decorative schemes in textured and stippled finishes of all kinds. Colors are lasting.

Specifications—Gypsteel colored finishes require only the addition of water to make them ready for application. Mix thin and in small batches as required. Base coat should be well scratched or broomed before applying finish; walls should be dry.

COVERING CAPACITY OF GYPSTEEL PLASTERS (APPROXIMATE)

Plastering base	Neat, yd. per ton	Wood-fiber, yd. per ton	Sanded, yd. per ton
Wood lath	190 Sanded 2 to 1 110	115 Unsanded 90	65 40
Metal lath Plaster board	Sanded 2 to 1 200 Sanded 2 to 1	Unsanded 60 Unsanded	75
Gypsteel tile	200 Sanded 3 to 1	140 Sanded 1 to 1	65
Clay tile and masonry	175 Sanded 3 to 1	110 Sanded 1 to 1	50

ARTSTONE ROCOR CORPORATION

45th Street and First Avenue, Bush Terminal, BROOKLYN, N. Y.

For other Artstone Rocor products, please see File Index

ARTSTONE PORTLAND CEMENT STUCCO

"There is No Substitute for Artstone Quality"

ARTSTONE PRODUCTS

ARTSTONE is a true portland cement stucco. It is permanent, beautiful in color and texture, and forever weatherproof. Artstone is a complete material in itself, machine-mixed, requires only the addition of water. Hazardous job-mixing of finish coat material is eliminated.

Artstone Stucco has stood the tests of time and of all climatic conditions on the exterior of thousands of important residences, churches, clubs, public buildings and industrial structures. It is used economically and effectively in the renovation and modernization of old buildings. Waterproofed, it is ideal for the interior walls and ceilings of laundries, bottling plants, swimming pool and shower rooms and elsewhere where moisture and condensation is a serious problem. It is widely used and highly regarded as a surfacing material in color over concrete for outdoor swimming and wading pools.

Artstone Stucco is manufactured to even higher standards than those of the American Concrete Institute. Its use is an insurance against the ravages of time and weather. Each Artstone job stands as a lasting testimonial to the architect's care in the selection of a truly permanent material.

Twenty-five Colors

There is animation to Artstone, its colors never "die." Pigments are permanent and unaffected by weather, rain or the actinic rays of the sun.

A wide range of 25 standard colors is available . . . an Artstone Color Chart will be sent upon request. Special colors are made to special order and include Brownstone, Brick Red, Black, etc.

Artstone Specifications

Base Coats—There shall be two base coats: scratch and brown. Each shall be composed of one part grey portland cement and three parts clean, sharp, well-graded sand to which may be added, if desired, not more than eight (8) pounds of hydrated lime to each sack of portland cement used.

The scratch and brown coat shall each be applied approximately ⅜ in. thick, making a total thickness of not less than ¾ in. Each base coat shall be troweled on hard and tight and, before it has set, cross-scratched to provide a mechanical key for the next coat.

Each base coat shall be kept damp for two days before the next coat is applied and then permitted to dry out for at least five days and, before the next coat is applied, the wall shall be evenly wet down to cut suction. All wetting down shall be done by means of a fog spray.

Finish Coats—The finish coat shall be Artstone Stucco, manufactured by ARTSTONE ROCOR CORPORATION, Building 65, Bush Terminal, Brooklyn, N. Y., color and texture to be selected by the architect.

Nothing but clean, drinkable water shall be mixed with Artstone and the same quantity of water shall be used for each mix. The Artstone finish coat shall be applied to an average thickness of not less than ¼ in. A tight skim coat of Artstone shall first be troweled on, doubling up immediately for texture.

Joinings, leaving-off and scaffold marks shall be avoided and work having such disfigurements shall not be accepted.

Curing—Twenty-four hours after the application of the finish coat the wall shall be dampened and shall then be kept damp for at least two days. A light fog spray shall also be used for this work and the wall shall not be soaked down by means of an open hose at any time.

Note: During cold weather caution must be exercised in the application of the base coats and Artstone. Close observation of weather conditions will insure uniformly perfect results.

Package and Coverage

Artstone is delivered to the job in 100-lb. bags ready for use after the addition of clean water. Average coverage for most finishes is 5 square yards per bag. Spatter dash or other light textures require less material; bag rubbed or heavily torn trowel textures more.

Artstone Plastic Marble for Corridor Walls

Artstone Plastic Marble is an excellent material for wainscots and corridor walls in public buildings and should be specified wherever smooth, washable interior surfaces are desirable. Colors and specifications are the same as for Artstone Stucco.

Storm King Theatre and Stores, Cornwall, N. Y.

ERARD A. MATTHIESSEN, Architect

Artstone Stucco used on Exterior. Tuckahoe Colored Finish on Interior

TUCKAHOE COLORED INTERIOR FINISH

TUCKAHOE Colored Interior Finish is a finish coat plaster for application over sanded gypsum, lime or Keene's cement plaster base coats. It produces a beautiful, colored, self-decorating, wear-resisting surface. No paint, glaze or other wall treatment is required.

Tuckahoe has been widely used in residences, offices, churches, schools and in public buildings of all types. Tuckahoe possesses a relatively high degree of acoustical efficiency, when compared to painted plaster ordinarily used. Its use is therefore desirable for all wall and ceiling surfaces where no special acoustical treatment is planned.

Color and Textural Effects

Tuckahoe Colored Interior Finish can be applied in a wide variety of textural finishes, and in Caenstone, Travertine and other natural stone effects, jointed to simulate masonry. Its rich plastic properties make application easy. Plasterers like to use it.

A standard range of 15 beautiful colors meets practically every need for interior decoration. A Color Chart will be sent upon request.

Tuckahoe Specifications—Short Form

The finish coat of all interior plaster (unless otherwise specified) shall be Tuckahoe Colored Interior Finish, manufactured by ARTSTONE ROCOR CORPORATION, Building 65, Bush Terminal, Brooklyn, N. Y., color and texture to be selected by the architect. Nothing but clean drinkable water shall be added to the material and it shall be mixed and applied in accordance with printed directions which the manufacturer will furnish to the contractor upon request.

Package and Coverage

Tuckahoe Colored Interior Finish comes in 100-lb. bags, ready for use after adding water. Coverage varies from 10 to 15 square yards per bag depending upon the texture and evenness of base. Average coverage is 12 square yards per bag.

Special Tuckahoe for Casting and Run Work

Special materials for casting and for run work are manufactured to match colors selected. Time of set is adjusted for specific purpose required and the material manufactured accordingly. Specifications should call for the use of Tuckahoe Special Plaster for Casting or Run Work of color selected by the architect.

Specifications and descriptive leaflets also available for the following Artstone products: Artstone Integral and Surface Waterproofings, Audicoustone Acoustical Plasters, Rocor Colored Pre-Mixed Mortar, Rocor Colored Flooring, "Dual-Control" Loose-Fill Insulation, Artstone Textural Plastic, Roman Tex, Roman Tex-Coat, Roman Stucco, Roman Plaster, Mothite Cedar Plaster, and "Dust-X" Cement Floor Hardener.

THE BEST BROS. KEENE'S CEMENT CO.

400 West Madison Street
CHICAGO, ILL.

PLANTS: MEDICINE LODGE, KAN., and SUN CITY, KAN.

BRANCH OFFICES

LOS ANGELES, CALIF. KANSAS CITY, MO. PHILADELPHIA, PA. CLEVELAND, OHIO BOSTON, MASS.

Products

Manufacturers of BEST BROS. KEENE'S CEMENT and "PIONEER" WHITE PLASTERS.

Grades of Keene's Cement

Best Bros. Keene's "Regular"—

This is our standard grade for ordinary plastering. It is of good color, fairly coarsely ground so as to mix readily with lime putty; has a tensile strength of over 600 lbs. per sq. in. in 7 days; an initial set of 2 hours and a final set of 4 hours.

It is used chiefly for base coat plastering; gauging in lime mortar; sand float finish; and is the principal ingredient in most of the colored interior finishes on the market today.

Best Bros. Keene's "Fine"—

This has the same tensile strength and setting time as the "Regular" grade but is ground finer and is of uniform purity of color, being made from hand picked rock.

It is used for backing up artificial marble; for making Caen Stone; for various other effects in ornamental plastering; and occasionally for finish coat work.

Best Bros. Keene's "Fast Finish"—

This has been manufactured specifically for a smooth finish coat, and is made to set up more quickly than our "Regular" grade when mixed with lime putty. It is designed to overcome the long interval of time that has previously been necessary between the application and the final troweling of a Keene's Cement finish. It is ground the same as the "Regular" grade; has a job set of 2 hours; and a tensile strength of over 500 lbs. per sq. in.

Best Bros. Keene's "Quickset"—

This is designed specifically for castings, running moldings, precast travertine, and similar purposes where the material is used in a neat form and has to set in the shortest time. It is finely ground; of pure white color; has an initial set of 20 minutes and a final set of 35 to 40 minutes. It has a tensile strength of 600 lbs. per sq. in.

Best Bros. Keene's "Superfine"—

This grade is used only for the facing of artificial marble. It is very slow setting, having an initial set of 4 hours and a final set of 8 hours. It is pure white in color and very finely ground.

Grades of "Pioneer" White Plaster

The various grades of white plasters are so well known and established in the industry that a detailed description of their characteristics is unnecessary. Best Bros. "Pioneer" Plasters are made from high grade gypsum rock and every care is used in their manufacture. They carry the same guarantee of uniformly high quality that applies to Best Bros. Keene's Cement.

"Pioneer" Finish Plaster (Slow Set)—

This is used for gauging with lime putty for smooth finish coat work.

"Pioneer" Gauging Plaster (Fast Set)—

Same grade of material as our "Pioneer" Finish, without the retarder. It is a straight plaster of paris and thus has a somewhat quicker set than the Finish grade.

"Pioneer" Molding Plaster—

A very finely ground, smooth working grade, designed specifically for running moldings, and relief castings.

"Pioneer" Casting Plaster—

This grade has been specially treated so as to take the minimum amount of water in attaining normal consistency. It is specifically designed for statuary and casting in closed molds.

Composition of Best Bros. Keene's Cement and Plasters

The various grades of Best Bros. Keene's Cement and "Pioneer" plasters are manufactured from gypsum rock of exceptional purity. Careful, standardized attention from quarry to finished product insures the uniform excellence of the various grades.

THE BEST BROS. KEENE'S CEMENT CO. is the original and largest manufacturer of Keene's Cement in this country, having been established since 1889.

Advantages—

All grades of Best Bros. Keene's Cement are certified to comply with the requirements of the American Society for Testing Materials, and the U. S. Government Master Specifications.

Best Bros. Keene's Cement forms the toughest, most durable and whitest wall it is possible to obtain, and can be troweled or floated to practically any style of finish that may be desired. Non-resonant, sanitary and fire resistant. Will not corrode metal lath.

Best Bros. Keene's Cement also combines perfectly with lime.

It possesses two other qualities of great value; first, it will keep indefinitely and can be used with perfect results after being stored for years; secondly, it can be retempered. It does not "kill."

Additional Data

Comprehensive and detailed specifications are given in our A.I.A. catalog, supplied promptly on request.

SPECIFICATIONS FOR KEENE'S CEMENT PLASTERING

General—All plastering shall be done with Best Bros. Keene's Cement mixed and applied according to the specifications of the manufacturer, provided they do not conflict with the requirements herein.

Three-coat Work on Metal Lath—

(A) Scratch Coat:
10 cu. ft., stiff, aged lime putty.
200 lbs. Best Bros. Keene's Cement, "Regular."
6 lbs. hair or fiber.
1 cu. yd., clean, sharp sand.

(B) Brown Coat:
7 cu. ft., stiff, aged lime putty.
150 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Three-coat Work on Wood Lath—

(A) Scratch Coat:
9 cu. ft., stiff, aged lime putty.
200 lbs. Best Bros. Keene's Cement, "Regular."
6 lbs. hair or fiber.
1 cu. yd., clean, sharp sand.

(B) Brown Coat:
7 cu. ft., stiff, aged lime putty.
150 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Two-coat Work on Tile, Brick or Gypsum Block—

(A) Brown Coat:
7 cu. ft., stiff, aged lime putty.
150 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Two-coat Work on Concrete Walls and Ceilings—

(A) Brown Coat:
9 cu. ft., stiff, aged lime putty.
200 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Finish Coats—Any of the following finishes may be specified over the above bases:

Smooth White Finish:
100 lbs. Best Bros. Keene's Cement, "Fast Finish."
80 lbs. stiff, aged lime putty.

Sand Float Finish—
100 lbs. Best. Bros. Keene's Cement, "Regular."
165 lbs. stiff, aged lime putty.
450 lbs. clean, sharp sand.

Smooth Hard Finish—for Wainscots, etc.:
100 lbs. Best. Bros. Keene's Cement, "Regular."
25 lbs. stiff, aged lime putty.

Extra Hard Finish:
Use Best Bros. Keene's Cement "Regular" or "Fine" neat. Add no lime.

Brick and Tile Surfaces—All brick and tile surfaces shall be thoroughly broomed off and washed before the mortar is applied, and shall be damp when it is applied.

Concrete Surfaces—New concrete must not be plastered until it is dry. All dust and loose particles shall be removed from concrete surfaces by brushing well with a wire brush. The surfaces shall be washed with clean water and kept moist while the plaster is being applied. Should the concrete surfaces be oily or gummy, they must be washed with a 10% solution of muriatic acid and water (1 qt. of acid to a bucket of water), and washed out with clean water within twenty minutes after the acid solution is applied. Any cracks in the concrete shall be cut to a V-shape and filled in with neat cement and water, which must be allowed to dry thoroughly before the plaster is applied.

This coat must be laid on with a trowel or wooden float and not touched again, except to knock off the rough edges with the float. Great care must be exercised in applying the base coat to concrete. It must be laid on in one operation and not touched again, for if the coat is moved in any way the bond is broken.

Any plastered surfaces that are loose and not properly attached to the concrete after the mortar has dried out must be cut out and done over again, and sufficient area shall thus be removed to make a uniform surface without having the appearance of patchwork.

Finish coat should never be applied direct to concrete walls or ceilings.

Grounds—On wood lath, grounds shall be ⅞ in.; on metal lath, ⅝ in.; on brick or tile, ½ in.

Sand—Must be screened, clean and sharp; free from loam, quicksand or other impurities.

Lime—Hydrated lime shall be soaked in watertight boxes for at least 24 hours before using.

Lump lime shall be well slaked; run through a sieve of ⅛-in. mesh, and properly stored and protected for a sufficient time before using to ensure all particles being thoroughly slaked.

Lathing—Metal lath shall be either painted or galvanized. Wood lath shall be of a good grade, free from knots, sap and bark (white pine preferred). It shall be thoroughly dampened shortly before plaster is applied.

SPECIFICATION FOR ARTIFICIAL MARBLE

(Scagliola)

All artificial marble shall be precast and shall be manufactured and installed according to the best practice.

Material—Best Bros. Keene's Cement "Superfine" shall be used for the facing of all artificial marble, and Best Bros. Keene's Cement "Fine" for backing up the facing to the required thickness of the slab or casting. All colors shall be high grade mineral colors; no dyes or vegetable colors shall be used.

Water—All water used in the manufacture of artificial marble shall be free from alkaline salts and, if necessary, shall be treated to eliminate these salts.

Reinforcing—Small slabs up to 2 ft. square shall be made a full 1 in. in thickness and will not require reinforcing, except for the burlap layer used in making the slab. Slabs measuring from 2 to 6 ft. in length or width shall be not less than 1¼ in. in thickness, and shall be reinforced with hot rolled channel or T-iron. Slabs over 6 ft. in length shall be not less than 1½ in. in thickness and reinforced. All reinforcement used must be painted to prevent rust stains.

Base Coat—All walls, which call for plastering underneath the artificial marble and are likely to contain alkaline salts, shall be treated with a waterproof paint and given a scratch coat of Best Bros. Keene's Cement "Regular" mixed with an equal part of a good, clean plastering sand. A brown coat shall then be applied of Best Bros. Keene's Cement "Regular" mixed with one and one-half parts of good, clean plastering sand, and shall be rodded to a true plane.

Concrete columns shall be treated with a coat of waterproof paint and shall be wrapped with metal lath. They shall then receive two coats of Best Bros. Keene's Cement and sand as provided for wall surfaces, and the brown coat shall be brought out to within ¼ in. of the finished surface.

Casting—The facing of the marble to be of Best Bros. Keene's Cement "Superfine" shall be not less than ⅛-in. thickness, and shall be backed up with Best Bros. Keene's Cement "Fine" to the thickness called for in these specifications for that size of slab.

After slabs have been allowed to set for 48 hours, they shall be stoned and filled with the same material and colors as used for the facing. They shall be filled and stoned as often as necessary until the face is free from all voids, and a hard, dense and true surface has been prepared to receive the polish.

Polishing—All artificial marble shall be allowed to cure and dry out thoroughly for a period of not less than six weeks after the final honing, before being polished. Polishing shall be done with oxalic acid and putty powder (oxide of tin). Shellac, wax or lacquer polishes will not be accepted.

THE FINISHING LIME ASSOCIATION OF OHIO

HEADQUARTERS OFFICE
501-2-3 Home Bank Building, TOLEDO, OHIO

MEMBERS

THE KELLEY ISLAND LIME & TRANSPORT CO.
NATIONAL MORTAR & SUPPLY CO.
THE NATIONAL LIME & STONE CO.
THE NATIONAL GYPSUM CO.
THE OHIO HYDRATE & SUPPLY CO.
THE WOODVILLE LIME PRODUCTS CO.
THE GIBSONBURG LIME PRODUCTS CO.
UNITED STATES GYPSUM CO.
THE HERZOG LIME & STONE CO.

SPECIFICATIONS FOR INTERIOR PLASTER, USING FINISHING HYDRATED LIME

For the purpose of aiding you in obtaining a perfect, everlasting job of plaster and aiding in the solution of your plastering problems, we are submitting these specifications on the use of Finishing Hydrated Lime. These specifications are based on average conditions and will serve as a guide in carrying out your work. The proportions of these specifications are based on the Finishing Limes of Ohio, which have physical characteristics peculiar to limestone found only in a small area in northwestern Ohio.

Materials

Finishing Hydrated Lime—All lime for finish coats shall be Dolomitic Finishing Hydrated Lime meeting the requirements of the American Society for Testing Materials, and THE FINISHING LIME ASSOCIATION OF OHIO, delivered at the job in original packages.

All lime for base coats shall be a mixture of finishing hydrated lime, hair and/or fiber, mill mixed and delivered on the job in the original packages.

Sand—(a) Sand for scratch and brown coats shall meet the requirements of the tentative specifications for sand for lime plaster of the American Society for Testing Materials.

(b) Sand for sand finish shall be a clean, dry screened sand 100% passing a No. 10 mesh screen, unless otherwise specified for specific finishes.

(c) Colored screenings and marble dust may be used to obtain color shades.

Gauging Materials—(a) Plaster of paris shall be clean, fresh and fully calcined, meeting the specifications of the American Society for Testing Materials.

(b) When Keene's cement is used it shall be a standard brand meeting the specifications of the American Society for Testing Materials.

(c) When portland cement is used it shall be a standard brand meeting the specifications of the American Society for Testing Materials and the Portland Cement Association.

Hair—(a) Hair shall be long washed goat or cattle hair free from foreign matter.

(b) Vegetable fibre free from tannin may be used and shall be long, clean, and well washed out.

Water—Water shall be clean and fit for domestic consumption.

Metal Lath—All expanded and fabricated lath shall be of an approved brand, applied in accordance with recommendations of the manufacturers.

Wood Lath—Wood lath shall be No. 1 White Pine or equal and should be as damp as practicable when mortar is applied. Courses should be broken every eighth course, and all lath laid horizontally and in one direction on ceilings. They shall be nailed securely with 3d nails to each support, and shall cross and have butt joints over a support. Lath shall be spaced ⅜ in. apart. Provide and securely place metal corner beads and metal lath strips in all exterior and interior angles.

Ground Work—(a) Grounds shall be placed and secured prior to the application of plaster. Wood lath and metal lath shall have ¾-in. or ⅞-in. grounds. Solid backings shall have ⅝-in. grounds.

Plastering on Concrete Surfaces

Base Coats (Putty Mix)

Ceilings—*Proportions:* Stiff putty, 1 part by volume; fine plaster sand, 2½ parts by volume.

Prepare ceiling by brushing or washing free from scale dust, dirt, oil, etc., and then slush down with neat portland cement as a primer or by hacking and roughing surface prepare bond to receive plaster. When this is set, apply coat as thin as possible. (If plain surface is required, it should be obtained through good formwork. Do not attempt to fill up uneven places with plaster.) Trowel to finish or texture desired. If white coat is desired, add finely screened sand to regular white coat.

Walls—⅝-in. grounds. *Proportions:* Stiff putty, 1 part by volume; plaster sand, 3 parts by volume.

Brush or wash surface free from all dirt scale, or foreign matter, and then slush down with neat cement, or by hacking and roughing surface prepare bond to receive plaster. When this is dry apply 1 coat of this mortar and by adding 1 more part of sand, apply a second coat, and bring out to grounds. Use rod and darby to bring to even surface. When firm but not dry, rub evenly with float to remove and prevent shrinkage cracks, and prepare surface to receive finish coat. When thoroughly dry apply finish coat.

Note: All interior surfaces of concrete basement walls below ground level should be furred and lathed before plastering.

Note: For first class work we recommend furring and lathing over concrete surfaces.

Base Coats Fibered (Dry Mix)

Ceilings—*Proportions:* Finishing Hydrated Lime, 2 sacks, 100 lb.; fine plastering sand, 300 lb.

Prepare ceiling by brushing or washing free from scale dust, dirt, oil, etc., and then slush down with neat portland cement as a primer, or by hacking and roughing surface prepare bond to receive plaster. When this is set, apply coat as thin as possible. (If plain surface is required, it should be obtained through good formwork. Do not attempt to fill up uneven places with plaster.)

Trowel to finish or texture desired. If white coat is desired add finely screened sand to regular white coat.

Walls—⅝-in. grounds. *Proportions:* Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plaster sand, 300 lb.

Brush or wash surface free from all dirt scale, or foreign matter, and then slush down with neat cement. When this is dry apply 1 coat of this mortar and by adding 1 more part of sand, a second coat, and bring out to grounds. Use rod and darby to bring to even surface.

When firm but not dry, rub evenly with float to remove and prevent shrinkage cracks, and prepare surface to receive finish coat. When thoroughly dry apply finish coat.

Note: All interior surface of concrete basement walls below ground level should be furred and lathed before plastering.

Three-coat Work on Metal Lath

Base Coats (Dry Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime and sand mixed in the following proportions:

Proportions—Scratch coat shall be composed of: Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 200 lb.

Brown coat shall be composed of: Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 250 lb.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure a good clinch and key.

(c) As soon as this coat has become firm but not dry,

scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat and bring surface out to grounds.

Rod and darby to true surface, and when this coat is firm, but not dry, rub evenly with float to eliminate and prevent shrinkage cracks and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15% to 20% of portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Base Coats (Putty Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime paste or putty, which has been allowed to age either neat or sanded for at least 24 hours, in the following proportions:

Proportions—Scratch coat shall be composed of: Stiff putty made from fibered lime, 1 part by volume; plastering sand dry, 3 part by volume.

Brown coat shall be composed of: Stiff putty, 1 part by volume; plastering sand dry, 4 part by volume; hair or fibre, 3 lb. per cu. yd. mortar.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure clinch and key.

(c) As soon as this coat has become firm but not dry, scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat, and bring surface out to grounds. Rod and darby to true surface and when this coat is firm but not dry, rub evenly with float to eliminate and prevent shrinkage cracks, and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15% to 20% of portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Three-coat Work on Wood Lath

Scratch or Base Coats (Dry Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime and sand mixed in the following proportions:

Proportions—Scratch coat shall be composed of: Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 200 lb.

Brown coat shall be composed of: Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 250 lb.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure good clinch and key.

(c) As soon as this coat has become firm but not dry, scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat, and bring surface out to grounds. Rod and darby to true surface and when this coat is firm but not dry, rub evenly with float to eliminate and prevent shrinkage cracks, and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15% to 20% of portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Base Coats (Putty Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime, paste or putty, which has been allowed to age either neat or sanded for at least 24 hours, in the following proportions:

Proportions—Scratch coat shall be composed of: Stiff putty made from fibered lime, 1 part by volume; plastering sand dry, 3 part by volume. Brown coat shall be composed of: Stiff putty made from fibered lime, 1 part by volume; plastering sand dry, 4 part by volume.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure good clinch and key.

(c) As soon as this coat has become firm but not dry, scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat, and bring surfaces out to grounds. Rod and darby to true surface and when this coat is firm but not dry, rub evenly with float to eliminate and prevent shrinkage cracks, and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15% to 20% of portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Two-coat Work on Brick, Tile, etc. (Doubled-up Work)

Base Coats (Dry Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime and sand, mixed in the following proportions:

Proportions—Scratch coat shall be composed of: Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 225 lb.

Application—(a) Plastering shall be to ⅝-in. grounds.

(b) All surfaces of tile, etc., shall be free from oil, dirt, dust or other foreign matter, and should be wet down before applying plaster.

(c) Apply a coat of this mortar with sufficient pressure to insure bond, and double back with the same mortar, bringing the coat out to grounds; rod and darby to true even surface.

(d) When surface is firm, but not dry, rub evenly with float to remove and prevent shrinkage cracks, and to prepare surface to receive finish coat.

(e) When plaster is thoroughly dry apply finish coat.

Base Coats (Putty Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime, paste or putty, which has been allowed to age, either neat or sanded for at least 24 hours, in the following proportions:

Proportions—Scratch coat shall be composed of: Stiff putty made from fibered lime, 1 part by volume; plastering sand dry, 3½ parts by volume.

Application—(a) Plastering shall be to ⅝-in. grounds.

(b) All surfaces of tile, etc., shall be free from oil, dirt, dust or other foreign matter, and should be wet down before applying plaster.

(c) Apply a coat of this mortar with sufficient pressure to insure bond, and double back with the same mortar, bringing the coat out to grounds; rod and darby to true even surface.

(d) When surface is firm, but not dry, rub evenly with float to remove and prevent shrinkage cracks, and to prepare surface to receive finish coat.

(e) When plaster is thoroughly dry apply finish coat.

Finish Coats

Putty made from Finishing Hydrated Lime shall be soaked 24 hours. This is done by sifting Finishing Hydrated Lime into an equal part by volume of clear water.

White Smooth Finish—Thoroughly mix gauging and Finishing Hydrated Lime putty and apply evenly. Trowel to eliminate all checks, chip cracks and uneven points until a true and even surface is obtained.

Proportion—Finishing Hydrated Lime, 4 sacks, 200 lb.; plaster of paris, 50 lb.

Textured White Finish—Thoroughly mix gauging and Finishing Hydrated Lime putty and apply a very thin coat completely covering the brown coat. Follow this with heavier coat to form texture desired.

Proportions—Finishing Hydrated Lime, 3 sacks, 150 lb.; plaster of paris, 50 lb.

Sand Finish—Mix Finishing Hydrated Lime and sand dry and screen through No. 10 screen unless specified for specific finishes, and add water and mix to proper consistency.

Apply a thin coat to all mortar surfaces, and double back with same mixture and float to true plane surface.

Proportions—Finishing Hydrated Limes, 2 sacks, 100 lb.; plastering sand, 300 lb.

Keene's cement, portland cement or highly retarded gypsum may be added to sand finish as a hardener in proportions of 10% to 30% of the entire mixture.

Texture Finish—Finish in same manner as sand finish, except second coat is applied heavier, and texture desired worked in with tools or hands.

THE KELLEY ISLAND LIME & TRANSPORT CO.

World's Largest Producer of Lime and Limestone Products

GENERAL OFFICES

Leader Building CLEVELAND, OHIO

PLANTS

WHITE ROCK, OHIO
KELLEYS ISLAND, OHIO
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HUNTINGTON, IND.
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TIFFIN, OHIO
BUFFALO, N. Y.

Products

TIGER FINISH HYDRATED LIME.
TIGER MASONS HYDRATED LIME.
TIGER FIBERED LIME.
LUMP LIME.
PEBBLE LIME.
GROUND LIME.

TRADE MARK

The Company

The Kelley Island Lime & Transport Co. is the largest producer in the world of lime and limestone products. The Company is in a position to furnish any kind of lime or limestone. The general offices are at 1122 Leader Building, Cleveland, Ohio, where all correspondence should be addressed.

TIGER FINISH is packed in white bags easily identified on the job. Specify and insist upon "WYTE BAG TIGER FINISH" being used.

Tiger Finish

Tiger Finish Hydrated Lime is used to produce:
(a) Smooth White Coat Finish
(b) Sand Finish
(c) Textured Finishes

The beauty and durability of each one of these is facilitated by the use of Tiger Finish which finds general acceptance by building material dealers and plasterers.

Leading architects throughout the country gladly specify Tiger Finish because they feel confident that their clients will get the highest quality lime that the market affords.

Just a word about the way Tiger is made. First of all comes the uniformity of the limestone deposit. To the high quality of the raw material is added a scientific process of manufacture in the hands of trained operatives closely supervised by a staff of competent chemists. Constant inspection is maintained. In brief, no effort is spared to make Tiger Finish the very best hydrate that can be produced.

Tiger Fibered Lime

This product, recently added to our line of building limes, provides a way to secure a completely Tiger plastered job. Tiger Fibered Lime for base coats (scratch and brown) is made with the same care and consequently is the same high quality product as Tiger Finish.

Tiger Masons

This is a hydrated lime for lime-sand and lime-cement-sand mortars. It is accepted by mason contractors as the standard masons hydrated lime.

Quicklimes

We manufacture old-fashioned quick limes: lump—pebble—ground. These when properly slaked form a rich, fat putty for use in sand-lime and sand-lime-cement mortars.

Efflorescence

This occurs when a masonry wall is not watertight. The most practical and economical way to secure watertightness is to make sure that the mortar has a high lime content. We suggest a 2:1:9 mortar. This means two parts lime putty (made from hydrated lime or quick lime); one part portland cement; nine parts of well graded clean mortar sand—all by volume. This mix would work out by weight as follows; hydrated lime 90 lbs. or quick lime 54 lbs.; portland cement 94 lbs.; sand 900 lbs. In actual field work when using hydrated lime it has been found very practical to use two 50-lb. sacks of hydrated lime, one standard weight sack of portland cement and nine cubic feet of sand. If this practice is followed it will eliminate the necessity of weighing materials on the job.

For Concrete Work

Use ten per cent of Tiger Finish or Tiger Masons by weight of portland cement. This makes for watertightness and enhances the appearance. Lime is an addition; it does not replace any ingredient.

Exterior Stucco

Tiger Finish Hydrated Lime makes for plasticity in application and watertightness in service. It operates to lessen hair cracking. Employ 20% of Tiger Finish by weight of portland cement used.

Specifications

Please turn to the specifications of the Finishing Lime Association of Ohio given in this section. These specifications show how Tiger Finish can be employed in plastering.

Co-operative Service

Our Architectural Service and Information Department will be glad to discuss with architects, contractors and dealers any problem arising in connection with the use of lime.

NATIONAL MORTAR & SUPPLY COMPANY

Manufacturers of Lime and Limestone Products

GENERAL OFFICES
212 Ninth Street, PITTSBURGH, PA.
PLANTS: GIBSONBURG AND COLD SPRINGS, OHIO
DISTRICT SALES AND SERVICE
CHICAGO, ILL., 43 E. Ohio Street
DETROIT, MICH., 325 Merton Road
COLUMBUS, OHIO, P. O. Box 722
ROCHESTER, N. Y.
TOLEDO, OHIO, 2030 Central Grove Avenue
SPRINGFIELD, OHIO, 2111 Broadway
EASTERN REPRESENTATIVES: The Abbey Co., Inc.
NEW YORK, N .Y., 103 Park Avenue
EAST ORANGE, N. J., 25 Halsted Street

Charter Member of the Finishing Lime Association of Ohio

Products

BANNER FINISHING LIME—Hydrated; BANNER BASE COAT LIME—Fibered; SUPERIOR HYDRATED LIME.

Banner

(Reg. U. S. Pat. Off.)

Banner Finishing Lime—Hydrated

Famous Ohio high magnesium (dolomitic) white lime for hard, smooth, white finishes and popular textured or period finishes; for complicated, artistic mouldings and ornamental work, precast or run in place. A favorite of plasterers and contractors since 1907. Its large yield when soaked into putty gives economy by large coverage. Has plasticity that encourages big yardage and perfect wall surfaces, angles, corners, and cornices by craftsmen. Apply in natural pure white color for later decorating; or, integral mineral colors, carefully and thoroughly mixed, may also be used. Painting, after finishing coat is dry, is recommended.

Packed in 50-lb. heavy paper, valve bags. Delivered to the job in original packages bearing above trade-mark printed in blue for easy identification.

Analysis—The purity of Banner Lime is proven by the following analysis, certified by the Pittsburgh Testing Laboratory. Results were calculated on non-volatile residue.

The extra quality of Banner is indicated by the last column which gives the requirements of the American Society for Testing Materials, specification C-6-24 and United States Government Master Specification SS-L-351 (superseding 249) for finishing lime.

	Banner analysis per cent	Requirements A.S.T.M. Spec. C-6-24 U. S. Govt. Spec. SS-L-351
Carbon dioxide	.94	Max. permitted 5.0%
Calcium and magnesium oxides	97.68	Min. required 95.0%
Sieve test:		
On 30-mesh	.004	Max. permitted 0.5%
On 200-mesh	3.32	Max. permitted 15.0%

Availability—Building material dealers in United States and Canada carry stocks of Banner Lime at all times for delivery in any wanted quantities. Consult local dealer for prices or communicate direct with any office listed above.

Facilities—Two modern plants located at Gibsonburg, Ohio, with 35 vertical gas-fired kilns. Duplication of all processes insures uninterrupted production. Quarry area over 20 acres, average depth 40 ft.

For 28 years rock analyses have shown absolutely no variation in chemical content. Reputation of Banner Lime is built upon unusual rock deposit, plus modern processing. This latter includes mechanical sizing of kiln stone and gas-fired kilns with absolute heat regulation for uniform burning; continuous process hydration (instead of batch hydration) for uniformity; air separation (instead of screening and grinding) for purity. Daily capacity 350 tons.

Banner Base Coat Lime—Fibered

For lime plaster. Famous Banner Finishing Lime, mill-mixed with proper proportions of mixed fiber; comes to the job in original packages ready for use. Gives the convenience demanded by modern practice together with the finest qualities of lime plaster. May be mixed and used immediately or aged to improve working qualities. If used at once, very thorough mixing is essential. Machine mixing is preferable in all cases.

Every architect knows the merits of "old-fashioned" lime plaster: durability without limitation; fire resistance; insulation against heat and cold and *sound*. Banner Lime carries at least three times its own weight of sand, so plaster made of it can economically be put on the walls with heavier grounds, thus multiplying the natural sound-deadening qualities of lime plaster.

Specifications

Complete standard specifications are given in SWEET'S CATALOG by The Finishing Lime Association of Ohio. As charter members of this organization we recommend the use of Banner Lime according to these specifications for standard practice, varying only as local conditions dictate. We can put you in touch with reliable plastering contractors qualified to execute dependable lime plastering at no higher cost than hardwall work.

Ask us to have one of our representatives call to show you portfolio of actual jobs plastered with three coats of Banner Lime Plaster and architects' and contractors' recommendations.

Complete standard specifications for your A.I.A. File will be cheerfully furnished upon request.

For Every Building Purpose—Use Banner Finish Lime for brickwork, tile setting, stone mortar, waterproofing concrete. Quality work is more easily achieved with a quality product. Further information on request.

Superior Hydrated Lime

A high magnesium white mason's lime produced at Cold Springs, Ohio, in a modern 10-kiln plant with a daily capacity of 100 tons. Used for all building construction requirements except finishing or whitecoating. Extensively used by United States Government in concrete construction; in dam work under Government supervision; in public utility enterprises where specifications are stringent and rigidly enforced. Distributed by building material dealers.

NATIONAL MORTAR & SUPPLY CO. SUPERIOR HYDRATED LIME PITTSBURG, PA.

TRADE-MARK

THE WOODVILLE LIME PRODUCTS COMPANY

Manufacturers of Blubag Brands of Lime Products for Building Uses

TOLEDO, OHIO

PLANT AND QUARRIES, WOODVILLE, OHIO
Charter Member of The Finishing Lime Association of Ohio

Products

Blubag Brands of Finishing Hydrated Lime — White Enamel, White Lily, Gold Medal; *Blubag* Fibered Lime Plaster; *Blubag* Sand Finishes (Interior); *Blubag* Stucco Finishes (Exterior); *Blubag* Brick Cement; Prestone Superlime Plaster; Ace High Mason's Lime; Lump Lime; Rex Cement Products Improver; Cold Water Paints: Newkote, Interior; Stucco Seal, Exterior.

Quality of Lime Is of Greatest Importance

Eighty per cent of the interior of a building visible to the eye is wall. Quality of lime used is, therefore, of greatest importance and should receive architect's most careful consideration.

Blubag brands of hydrated finishing lime are guaranteed to meet the standard of specifications of the American Society for Testing Materials as well as those of the Bureau of Standards.

Laboratory Tests Insure Uniform Quality

Nothing is taken for granted in the production of *Blubag* lime products. Every process of manufacture is under the supervision of seasoned and experienced men and skilled chemists.

A complete and modern research and testing laboratory is an important factor in preserving the natural qualities of *Blubag* lime—whiteness, plasticity and strength—which makes it a product of the highest quality that may be obtained anywhere at any price.

Blubag Finishing Hydrated Lime

For plain and textured wall finishes. Made in three brands: White Enamel, White Lily, Gold Medal, all of equal quality and all packed in the distinctive blue package labeled *"Blubag."*

Thousands of tons of *Blubag* Finishing Hydrated Lime are constantly undergoing a natural "Dyjestive" process in our immense curing tanks. It assimilates the raw and caustic tendencies of freshly hydrated lime, and leaves a pure, snow-white, bone-dry powder that is soft and safe as talcum.

As a result of this careful "Dyjestive" process *Blubag* Finishing Hydrate has a greater degree of uniformity and improved working qualities. Yet not a single iota of life and efficiency has been sacrificed or impaired.

This "Dyjestive" process is just an additional step taken in the course of manufacture to preserve and enhance the remarkable natural quality of our limestone which produces a hydrated lime that is "Quality from Stone to Finish."

Blubag Fibered Lime Plaster for Base Coat Plastering

Prepared from our finishing hydrated lime mixed with proper proportions of fiber, thoroughly distributed and ready for mixing with sand and water at the job. It can be applied to wood or metal lath, brick, gypsum tile or other masonry bases immediately after mixing.

This fibered lime plaster develops excellent acoustical qualities and produces a hard, durable wall.

Twelve Specific Properties that Make Blubag Fibered Lime Plaster Outstanding

(1) Durability.
(2) Specific sound-deadening properties.
(3) Develops high early and ultimate strength.
(4) Improves with age.
(5) Fire-resistant.
(6) Workability enables the plasterer to produce straight walls and angles.
(7) Retemperable—eliminates loss of material.
(8) Increases productivity of plasterer with less effort.
(9) Non-corrosive to metal.
(10) Maximum covering capacity.
(11) Produces even unbroken surfaces.
(12) Gives perfect base for decorations.

Blubag Sand Finishes

Blubag Sand Finishes are standardized products using graded, natural colored aggregates, with standard cementitious materials, factory mixed and bagged, arriving at the job ready for the mixing water and application. They can be applied as sand float or textured finishes.

Facilities and Distribution

Plant and quarries are located at Woodville, Ohio, and general offices at Toledo, Ohio. Products are distributed through all principal building material dealers throughout the United States.

How to Specify Blubag Lime

For a complete standard form of specification refer to the pages in this catalogue of The Finishing Lime Association of Ohio.

Select the particular specification to fit your requirements and insert the brand name *"Blubag* Brands of Finishing Hydrated Lime," together with "manufactured by The Woodville Lime Products Company, Toledo, Ohio."

Specifications

Detailed specifications on all *Blubag* lime products will be sent to you upon request.

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